S. 153

Volume 24 Part 2 - 1997

Lincolnshire Naturalist

ransactions of the Lincolnshire Naturalist's Union
for 1996

Dragonflies & Damselflies in Lincolnshire
New British Plant and Spider
Natural Areas in Lincolnshire
Studying Rusts & Smuts
Lincolnshire Natural History in 1996

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Registered Charity Number 255645 - ISSN 0963-0961
printed by Goodfellow Egan Ltd. Unit 2, A1 Parkway, Peterborough, PE2 6YN

THE DRAGONFLIES & DAMSELFLIES OF LINCOLNSHIRE

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Dave Bromwich

Introduction

Dragonflies and damselflies, the insect order Odonata, are some of the insect world's most magnificent creations. There are 5000 species world-wide, from a wide range of climates, but all sharing the need to breed in water, having an aquatic larva or nymph. Their distinctive appearance and, in the bigger species, rattling wings, gave them something of a bad press in olden times, being known as 'witches knitting needles', Devil's darning needles' or 'horse-stingers'. They are all completely harmless to humans. In this article, scientific names and English names follow those used in the "Atlas of the dragonflies of Britain and Ireland", by Merritt et al (1996).

In Britain we possess about one third of the European Odonata, occurring in all habitats from rivers, streams, ditches, canals, natural and man-made lakes, big ponds, garden ponds and upland acid pools. The British list is currently of 40 breeding species, 10 migrants and 3 extinctions. The Lincolnshire list could now be considered as 20 breeding species, 1 migrant and 3 extinctions. I have discovered records of two long since extinct species (included in the above figure) and an unconfirmed record of a rare migrant, the red-veined darter *Sympetrum fonscolombei* (excluded from the above figure). There are also single records of three species thought somewhat improbable and without supporting evidence they have been discounted, namely the golden-ringed dragonfly *Cordulegaster boltonii,* the beautiful demoiselle *Calopteryx virgo* and a nymph record of the white-legged damselfly *Platycnemis pennipes.* This latter species is now spreading north however and may well appear in the south of the county within the next few years.

Dragonfly history in the area started 300 million years ago, with important fossil finds being made in the late 1970's from the Derbyshire coalfields (Whalley, 1979; 1980). These were examples of the famous giant insects of the Upper Carboniferous era, one specimen reaching to an estimated 50 centimetre wingspan, another being a mere 20 centimetres, still twice as big than any extant British species. Open any dinosaur book and a panorama of this era will inevitably feature a drawing of one of these magnificent creatures. Anyone who has been close to an emperor dragonfly *Anax imperator* can only marvel at the power and agility of these insects with their 10 centimetre wingspan. The largest fossil specimen, found in France, the aptly named *Meganeura monyi*, had a wingspan of 70 centimetres (Matthews, 1995). The largest flying insects of modern times are the atlas moths, mustering a comparatively feeble 30 centimetres. If ever a "Jurassic Park" scenario came to reality I would rather see these ancient dragonflies recreated than a *Tyrannosaurus*!

My own interest in Odonata started at an early age. I lived on the western edge of Melton Mowbray in Leicestershire and had ready access to the River Eye and the gravel pits of the River Wreake. My junior school sports field backed on to the River Eye so I would often volunteer to field on the boundary during cricket practise, where I could practise my natural history skills during the dull bits. There was always one creature that I really enjoyed seeing, the stunning banded demoiselle *Calopteryx splendens*, surely an insect from the Fabergé school of evolution. Much more common was the brown hawker *Aeshna grandis,* which appealed due to its size and aggressive behaviour. Unfortunately dragonfly watching was curtailed when I was promoted to wicket-keeper.

My interest was really rekindled a number of years later when in 1980 I was the summer warden at Gibraltar Point. Here I met Eric Blood, a great dragonfly enthusiast, who between 1985 and 1987 carried out an intensive and detailed study of the Reserves Odonata (Blood, 1985-1987). This is and will continue to be an excellent example to follow for anyone studying these insects and Eric's work remains by far the most comprehensive study ever undertaken in the county's history on this group. He continues to monitor the populations at Gibraltar Point and has now amassed 20 years of field records and taken many hundreds of photographic slides.

The one person who has contributed most to the recent recording of the county's Odonata is John Redshaw, President of the LNU in 1984/85. John has acted as county recorder since the mid 1970's, and has collated records from a small but dedicated band of observers. Without his efforts this article not have been possible and he has also been very supportive in assisting me with the species notes.

Our Odonata have been poorly recorded for most of this century. The first County list was produced by Herbert C Bee in 1917 (Bee, 1917), with 17 breeding species compared to the 20 known today. His list contained records of the scarce chaser *Libellula fulva* and the white-faced dragonfly *Leucorrhinia dubia*, both now extinct in the county, but did not have emperor dragonfly *Anax imperator*, migrant hawker *Aeshna mixta* or black-tailed skimmer *Orthetrum cancellatum*, well documented colonisers since Bee's time. The absence of black darter *Sympetrum danae* from Bee's list is a mystery, as this species must have almost certainly been present in the county in some numbers on the lowland heaths.

Bee's intention for his report in 1917 is very much in line mine. Although it is 80 years on, his sentiments are still applicable and I could not better them. *"The Dragonflies of Lincolnshire do not appear to have received the attention that such conspicuous insects might be expected to attract, and consequently the records of their various species are not nearly so numerous as is the case with Coleoptera and Lepidoptera. This list is published for the purpose of endeavouring to stimulate further investigations of the distribution of Odonata, or Dragonflies, throughout the county, and thus to provide the materials for an augmented record at some future time."*

Bee's words were not heeded. Notes on Odonata are conspicuous by their absence in this journal and only since 1979 do records begin to appear with any sort of regularity. Two articles in 1983 stand out as milestones in the county's recording history; Chapman and Wilson (1983) featured the first ever distribution maps and Redshaw (1983) provided with the first ever status accounts. This was followed by more comprehensive maps by John Redshaw in 1993 (Redshaw, 1993). My aim is eventually to produce tetrad distribution maps. In this article I offer an update on these most excellent species at a time when their importance as biological indicators to our threatened wetlands has never been greater.

Biology

There is no space for more than a cursory mention of biology and behaviour. As my aim is to encourage the awareness of our Odonata, I will concentrate on identification, hoping that enthused naturalists will seek their own information about these fascinating creatures.

The production of a New Naturalist book by Corbett et al in 1960 lifted national interest, but no real concerted effort began in Lincolnshire until the 1970's, particularly enhanced by the publication of Cyril Hammond's "The Dragonflies of Great Britain and Ireland" in 1977, the first time a comprehensive identification guide had been produced for the Order. There are now quite a number of illustrated identification guides to British and European species (eg Gibbons, 1986) and a national Atlas has been produced (Merritt, et al.. 1996).

The identification of mature adult insects in Lincolnshire is not demanding. Grouping them into their main "types" of damselflies, darters, chasers and hawkers is easy and, with only 20 species likely to be encountered, it is not difficult to become competent.

There is little need to catch and no need to kill adult Odonata for identification. Close-focussing binoculars and a camera with a suitable lens are all that is required for identification for the most part. Details like the antehumeral stripes, leg colour, wing veins and colours along with key abdominal colours, spots, dots and other shapes are easily seen in the field. Occasional aberrants, or for the confirmation of a rare species, specimens may need to be caught to allow close examination of various external body parts, particularly the anal appendages. The use of a net, tube and a hand lens is all that is required. If confirmation of identification is necessary from a higher authority, they will survive quite well in a container as long as movement is restricted so they do not batter themselves. Adult Odonata appear in Lincolnshire from late April (large red damselfly *Pyrrhosoma nymphula*) until mid-November (common darter *Sympetrum sanguineum*).

With an aquatic larval form which can take up to five years to develop and a highly visible terrestrial form, they can give a quick feel for the well-being and diversity of a water body. Some are mildly pollution-tolerant, such as the blue-tailed damselfly *Ischnura elegans*, common in garden ponds and a range of other water-bodies, often the only species present. Others such as the scarce emerald damselfly *Lestes dryas* are very sensitive to water quality and have exacting requirements, in this case shallow, well vegetated ditches. The black darter *Sympetrum danae* occurs only in acid water and the banded demoiselle *Calopteryx splendens* only in running water. These statements need interpreting with care as they are very mobile creatures in the adult form and can literally turn up anywhere. Only when in breeding areas do these statements hold true. Twelve species breeding consecutively on a site for three years is a consideration for SSSI status (NCC, 1989).

Mating pairs of Odonata can be regularly observed, particularly in the damselflies. The characteristic 'wheel shape' is adopted when mating is taking place. Prior to mating the male loads a special chamber on the second abdominal segment with a sperm packet from his genital opening near the tip of the abdomen. On discovering a female the male grasps her by the back of the neck with his anal claspers. The female reaches up with her abdominal tip to the male's accessory genitalia. Prior to sperm transference the male scrapes the females storage receptacle to ensure that it is his, rather than an earlier rival's, sperm that will fertilise the eggs. Males will often hang on to the female by the neck up to and during egg laying, to ensure that no other male can mate with his female.

Egg-laying takes two forms. Some species, particularly damselflies and hawkers carefully place individual eggs on or in vegetation, either by submerging and placing the egg directly in a plant stem or by sticking the egg to the underside of floating vegetation. The southern hawker *Aeshna cyanea* often lays its eggs just above the water level, particularly in rotting wood. Other species, notably the darters and chasers, tend to be egg scatterers, flying over the water surface and flicking the abdomen into the water to release the eggs.

Nymphs (plate 1) can be found throughout the year in a wide variety of water-bodies. As with the adults, nymphs can easily be grouped into damselflies, darters/chasers and hawkers. The identification of nymphs to species level is difficult and may result in the death of the creature. An easier practise is to search for the nymphal skins (exuviae) which are left behind when the young stage climbs out of the water and turns into an adult form. Any solid structure near the water such as emergent plants, trees, posts, bridges or walls are good places to search for exuviae and if the adult is found just emerging or drying out nearby it makes identifying the skin much easier and it can be saved as a reference specimen. However the young (teneral) adult (plate 2) may take some time to develop identifiable markings and many hours, sometimes days, to develop its full colours.

Field observations reward the naturalist with many hours of entertainment. To watch dragonflies hunting for prey, catching and devouring flying insects on the wing by forming their legs into a 'basket', is to see 300 million years of evolution at its finest. The insect air-speed record is held by an Australian dragonfly at a staggering 36 m.p.h. (Matthews, 1995) Scaled up, they would make peregrine falcons look clumsy and inelegant!

Species identification

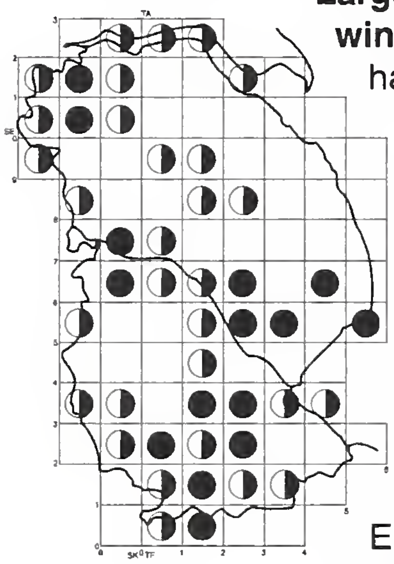
These notes are applicable to mature typical adults that are found in the county of Lincolnshire. They are intended to highlight characteristics which are, for the most part, readily visible in the field with the aid of a bit of patience and close-focussing binoculars. A good field guide, (Hammond, 1977 is particularly recommended for its illustrations and Gibbons, 1986 for good photographs and text), is essential for anybody wishing to take the study of Odonata any further.

Dragonflies (Suborder Anisoptera)

These are large, powerful insects, with their wings held out at right angles to the body at rest. Two families are represented:

Hawkers (Aeshnidae) are the archetypal dragonflies, big, long-bodied, powerful fliers. They are usually difficult to approach and care should taken with identification, especially if they are in flight. Once settled, a pair of binoculars is a great help in sorting out the species, as well as clues from habitat and flight period.

Brown Hawker *Aeshna grandis* (front cover)



Large size, relatively unmarked **brown body** and unmistakable **amber wings** make this one of our most distinctive dragonflies. The males have small indistinct blue dots towards the top of the abdomen.

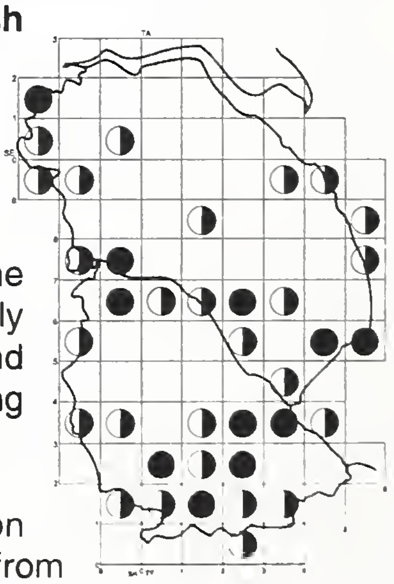
On the wing from early July to early October, it is widespread across the county, utilising large ponds, small lakes, gravel pits and slow moving streams and ditches, preferring well vegetated waters to breed in. It is not a rapid coloniser of new gravel pits, for example. Due to the males' territorial behaviour it is not often recorded in large numbers at one site, one male will protect an area of over 50 metres in length. As it prefers to hunt over open ground it is usually found close to favoured breeding areas. Nationally it is common throughout south-east and eastern England, north to Yorkshire and Lancashire. It is absent from Devon and Cornwall, Scotland and most of Wales.

Southern Hawker *Aeshna cyanea*

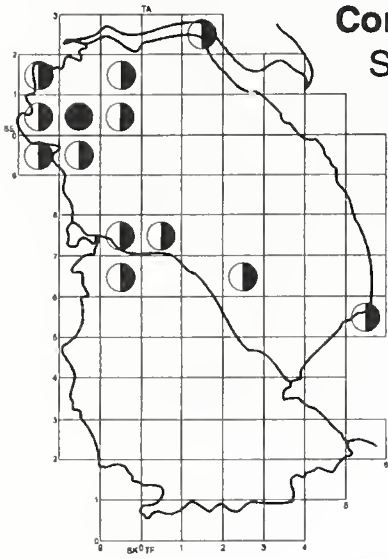
A **large** species, appearing a striking array of **greens, yellows and blues** in the male, but **no blue** present in the females. Very pronounced **greenish antehumeral stripes,** a large **yellowy-green triangle** on the second abdominal segment and **tail bands joined**, blue in the male, green in the female, make it relatively easy to identify.

Very much on the north eastern limit of its national geographical range, there is a definite stronger presence of this species in the south of the county. It is common in southern Britain but largely absent from upland areas. It is a very confiding insect and frequently 'investigates' people who walk into its territory, allowing excellent close-up views.

It is unusual that it often flies in the early morning, at dusk and on cool, cloudy, sometimes rainy days. It often moves well away from



water and will create a territory along a suitable hedgerow for example. Breeding areas cover a wide range of ponds, lakes, canals and ditches.



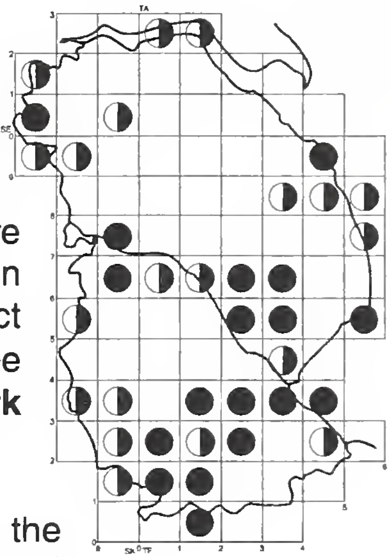
Common Hawker *Aeshna juncea*

Separation from the similar migrant hawker is by **brighter spots** on the body, (blue in the male, yellowish in the female), **thin yellow antehumeral stripes** (male only) and perhaps most distinctly when a good view is afforded, the **bright yellow costa**, the top wing vein. The **separate spots on the end of the abdomen** and **thin or absent antehumeral stripes** immediately separate it from southern hawker. There is also **no triangular mark** on the second abdominal segment. Occasional overlaps in flight period with the hairy dragonfly may occur, when the larger size, its bright yellow costa, **no dot** on the first abdominal segment and lack of thoracic hair should assist identification.

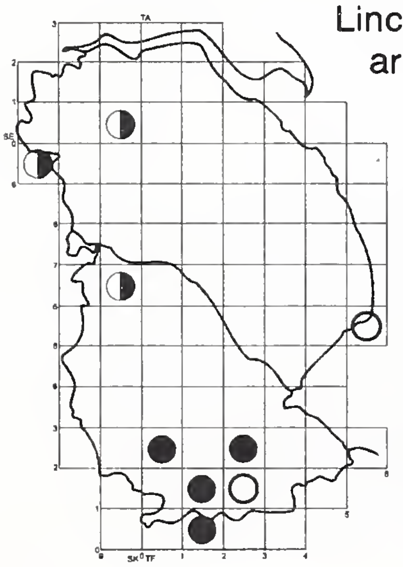
As a species of upland, moorland and heath requiring acidic oligotrophic waters in which to breed, this will never be a common species in eastern England, and is a rare species for the county. It was probably once more widespread than it is today, but with the dramatic loss of over 80% of lowland heath habitat in the county through afforestation and agriculture since 1920 it is now a rare insect. Its stronghold is concentrated on the peatlands of Crowle Waste / Isle of Axholme area, with fragile remnant colonies hanging on in small areas of the South West Lincoln and Woodhall Spa heaths.. The typical flight period is from late June to early October.

Migrant Hawker *Aeshna mixta*

A **smallish** hawker, with a very late flight period, being on the wing from August to early November in the right weather conditions. It can be separated from the hairy dragonfly on flight period, but care is needed when separating it from the much scarcer common hawker. The body markings in both sexes are similar, appearing rather dull blue dots in the male, dull green in the female, on a dark brown background, with absent or indistinct antehumeral stripes. A **cream triangle / tack shaped mark** can be seen on the top of the abdomen. The **top of the wing has a dark costa.** The **anal appendages** are **very long**.



Nationally it occurs mainly south of a line from the Humber to the Mersey. It has dramatically expanded its range in recent years and is now moving into Yorkshire and Cheshire. It has a strong presence in the county and is often numerous where it is found, being less territorial than other hawkers. The south of the county, the coastal strip between Gibraltar Point and Donna Nook, the Lincoln gravel pits and the River Bain gravel pits are all favoured areas. It can often be found well away from water in woodland, along hedgerows and in gardens.



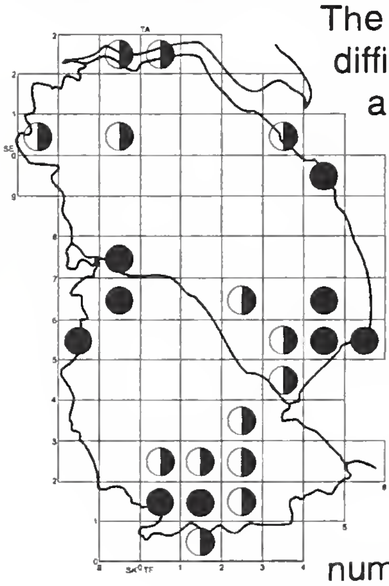
Hairy Dragonfly *Brachytron pratense*

The county's **smallest** hawker, the most immediate aid to identification is its **early flight period**, as it is on the wing in May, June into early July, so rarely coincides with the flight periods of the bigger hawkers. Superficially resembling both the common hawker and the migrant hawker, close inspection will reveal a **hairy thorax, indistinct or absent antehumeral stripes** and a **single yellow dot** on the first abdominal segment. The male is dotted blue, the female yellow. It never overlaps in flight period with the most similar insect, the migrant hawker.

It is an elusive species, frequenting reedy areas, in which it often settles. It is susceptible to disturbance and intensive agricultural practises such as ditch clearing and the resultant eutrophication of water bodies have reduced its range. Recent records have shown a strong recovery in Cambridgeshire and although it has always been a county rarity, it has recently moved back into the south of the county in the Baston/Thurlby area. The only other currently reliable site is at Messingham, the county stronghold for some years. There has not been a definite record for several years from the S.W. Lincoln gravel pits complex.

This species is recognised as Nationally Scarce (Category B) (NCC, 1989) and is include in the Lincolnshire Trust's Biodiversity Strategy report as a county endangered species.

Emperor Dragonfly *Anax imperator* (plate 3)

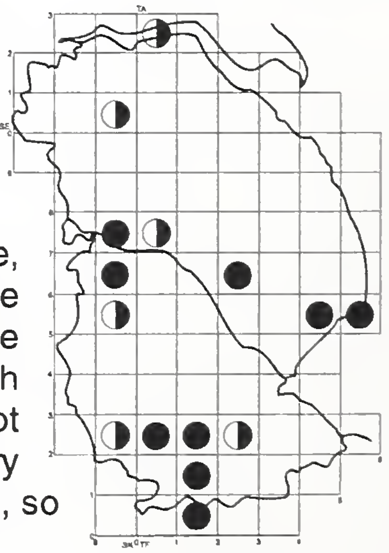


The **largest** of the county's dragonflies, a powerful insect, wary and difficult to approach. It is most usually seen on territory, hunting over a water body, swooping and darting with amazing speed and agility. In flight the male appears a **striking turquoise blue,** the female a **dullish green,** but the **absence of spots** on the abdomen separates them from other hawkers. At rest a **dark line** can be seen running down the middle of the abdomen.

Favoured habitats are big ponds, gravel pits, canals and slow flowing rivers with abundant marginal vegetation. The flight period is from early June to late August. Continental specimens are thought to have bred at Gibraltar Point - the females being coloured blue as the in the male forms. It is never particularly numerous where it is found due to its very territorial behaviour. It is found predominantly in the south-east of the county, and very much towards the northern limit of its national distribution, few records occurring north of the Humber/Dee line.

Chasers *Libellulidae* These initially look very similar to each other, but careful observation, possible in the field with binoculars, allows them to be readily identified. They have a stout appearance, body length appearing much shorter in relation to wingspan than exhibited by the hawkers. Flight is usually low to the water, fast and direct, rarely performing the aerial acrobatics of the hawkers. Careful field observation will reveal a favoured perch, usually a dead stick or sun-trap on the ground, that they will habitually return to at frequent intervals, allowing the observer good views.

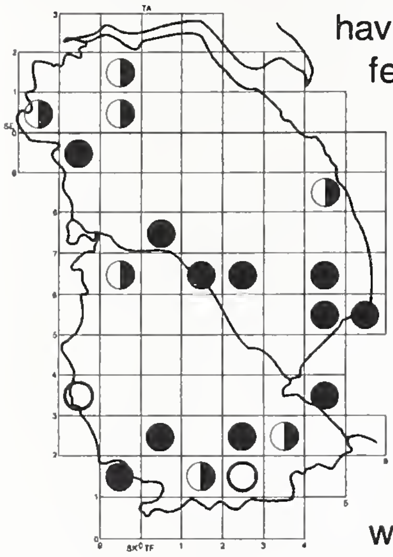
Black-tailed Skimmer *Orthetrum cancellatum*



The males combination of **blue abdomen** with distinctive **black tip** and **clear wings** make it readily identifiable. The female is as equally distinctive with its **yellowish brown body** with **black zigzag marks** along the abdomen and **clear wings.**

This is a very distinctive species for the county in that for a while, Messingham Sand Quarry was the northernmost site for the species in the country (1990) although its continued range expansion means that it has now probably colonised South Yorkshire. It was first recorded in Britain in Essex in 1934, not reaching Lincolnshire until 1985, when it was seen at Cherry Willingham. Favoured breeding areas often contain bare ground, so new gravel pits are ideal for its colonisation, and this is certainly true for the county. The Deeping, Bain, south-west Lincoln and Messingham sites are all mineral-working areas and form the strongholds for this species.

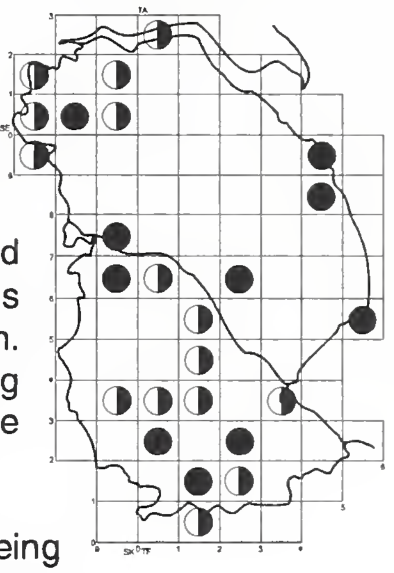
Broad-bodied Chaser ***Libellula depressa*** (plate 4)



As the name suggests, a **squat, very broad-bodied** species, the male having a **blue abdomen,** and **black-brown basal wing patches**. The female is **yellowish brown, with yellow patches** on the sides of the abdomen and **black-brown basal wing patches.**

This was until recently a very scarce county insect, but there has been a marked increase in records since 1992. Lincolnshire is very much at the northern edge of the species' range, so perhaps this spread is due to the better summers of late. It is very much a coloniser of new ponds, and was recorded at the Lincolnshire Trust headquarters in Horncastle only a couple of weeks after a new pond been filled. It has also bred successfully in a very small garden pond in Washingborough. It will utilise a range of water-bodies with still or very slow moving water, often well vegetated, and exhibits some tolerance to mild pollution. It can be seen on the wing from mid-May to early August.

Four-spotted Chaser ***Libellula quadrimaculata***

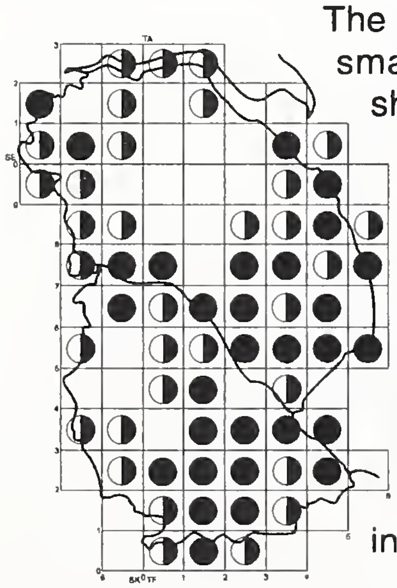


The male and female are alike with a **brownish body, golden marks** on the sides of the abdomen and **dark tips** to the ends of the abdomen. **Yellow and black basal wing patches** with **two black dots** on each wing, give the wing a more patterned appearance than in the other two species. Close-up views of this insect can be readily obtained by waiting near its favoured perch. The 'jizz' of the patterned wings can then be seen, making identification easy. It has a long flight period, from early May to the middle of August.

It is the most common and widespread of the county's chasers, being found from coastal areas, heathland pools, ponds, ditches, canals and mineral workings. It is also common and widespread across most of the country.

Scarce Chaser ***Libellula fulva***

This species is nationally rare, (Red Data Book Category 3 - Shirt, 1987) two old records from 1917 for the Lincoln area are the only evidence of this species in the county.

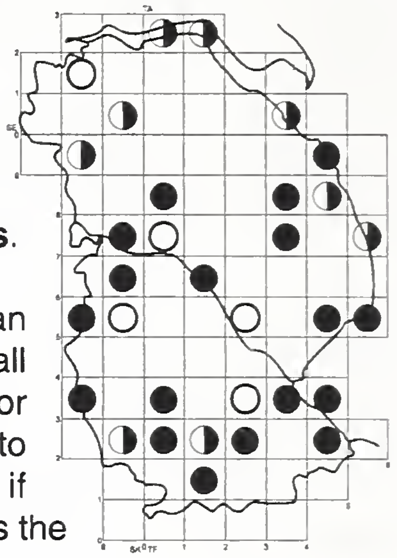


The **darters** are also members of the **Libellulidae** and are the smallest of the dragonflies, physically resembling mini hawkers in shape and behaviour, although they are more closely related to the chasers. They perch in a distinctive manner with the wings swept forwards and downwards. Mature males that occur in the county are readily identifiable, but care needs to be exercised with females, immatures and old specimens.

Common Darter ***Sympetrum striolatum***

The most common dragonfly in the county, the male can be readily identified by its **pale red body**, with a **straight abdomen** and **two small black marks** near the end of the abdomen. Close inspection reveals **black and yellow striped legs**. Females possess a **brownish body,** the **black and yellow striped legs** being an important feature in separating them from female ruddy darters.

It is found in a wide range of habitats across the county, only being absent from the higher Wolds. It is on the wing from the end of June and is the last Odonata to be recorded flying in the year, individuals not uncommonly persisting to the second week of November. Nationally it is widespread across England and Wales, although scarce into northern England and largely absent from southern and central Scotland.



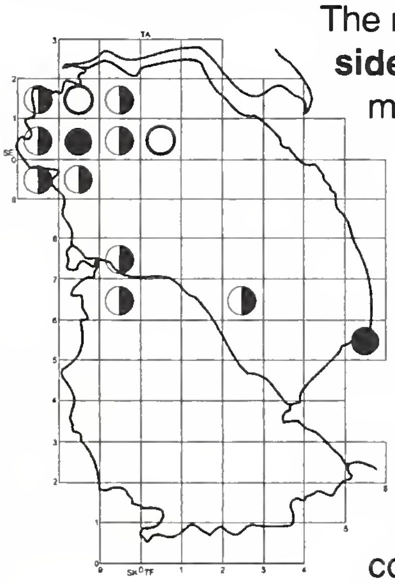
Ruddy Darter *Sympetrum sanguineum*

The mature male is striking, with a **blood-red abdomen** and **pinched waist** giving it a club-shaped appearance. It also has uniformly **black legs**. The female has a **brownish body,** similar to the common darter, but can be identified by its **all black legs**.

As a breeding species it prefers well vegetated pools, and can tolerate brackish conditions, so is not uncommon at the coast in all the main nature reserves. It tends to appear on the wing a week or so before the Common Darter, but only persists into mid-September. It is a strong migrant, so it is important to note if observations refer to breeding, particularly on the coast, to assess the true status of the county's increasing population.

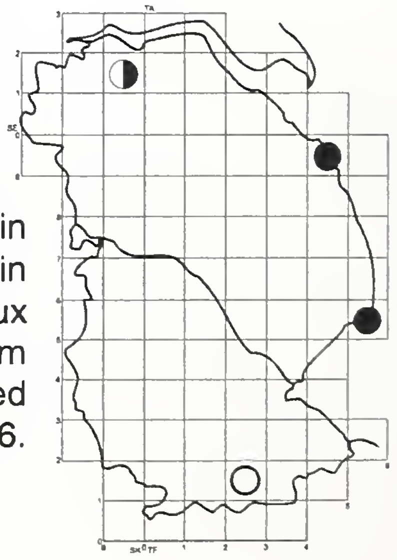
Nationally, this species was categorised as Nationally Scarce, category B, but has expanded its range and was not included with that status in NCC (1989). It occurs mainly south of the Humber/Severn line, although rare in the south-west and Wales.

Black Darter *Sympetrum danae*



The male is an unmistakable **black** with **small yellow patches** on the **sides** of the thorax and abdomen. It also has a **pinched waist.** The mature female is a **dark brown,** with a **black triangle** on the thorax. The teneral male is a **striking yellow and black.**

This species is very much a moorland / heathland specialist, being largely confined to the Crowle Waste/Isle of Axholme area, although remnant populations have been recorded in the past from the lowland heath fragments in south-west Lincoln and Woodhall Spa. A curious anomaly has occurred over the last few years with small numbers being recorded from Gibraltar Point. It can be seen on the wing from mid-July to October. Nationally its range represents the availability of its habitat, so is more common in the north and west, and largely absent in the east, due almost entirely to loss of habitat through agricultural improvement or afforestation.



Yellow-winged Darter *Sympetrum flaveolum*

A rare migrant in the county, distinguished from our other darters by its unmistakable **wings, the basal third of which is yellow** in both sexes. Until 1995 the only records had been Cowbit Wash in 1956 and Black Walk Nook in 1959. An unprecedented influx occurred in August of 1995 with at least 20 being recorded from Gibraltar Point and several from Donna Nook. It successfully bred at Gibraltar Point in 1995, with an emergent being seen in 1996.

Red-veined Darter ***Sympetrum fonscolombei***
A report in the Atropos (Parr, 1997) magazine noted an unconfirmed record for this migrant species from Huttoft Pit in August 1996. No further details are currently available for what would be a new county record.

White-faced Dragonfly ***Leucorrhinia dubia***
Only old vague records exist, although the first authenticated British record was from Thorne Moors on the 28 July 1837, so its presence in the Humberhead Levels within the county boundary at this time is almost certain. They are no records for the 20th century.

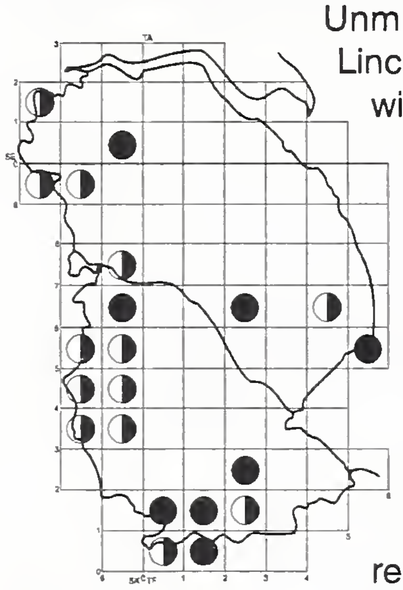
The Damselflies (Suborder Zygoptera)

These are typified by their small size compared to dragonflies, very thin bodies, and wings folded across the back at rest, certainly never at right-angles as in the dragonflies. Three families are represented:

Demoiselles (Calopterygidae)

Our largest damselflies, with metallic bodies and coloured or part-coloured wings make this an unmistakable group.

Banded Demoiselle ***Calopteryx splendens*** (plate 5)



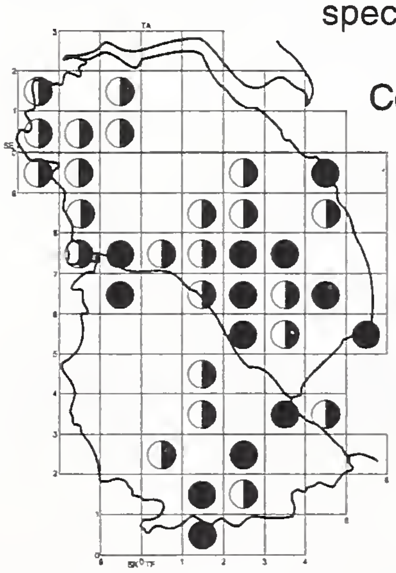
Unmistakable, the male in particular being a strong candidate for Lincolnshire's most spectacular insect. It has a **metallic blue body**, with **deep blue bands on the outer third of the wings**. The female has a **metallic green body**, with a **pale green sheen to the wings**. The male has a weak but purposeful fluttering flight, which is also very distinctive.

A river species, particularly common in the Witham above Lincoln, the Welland above Deeping and parts of the River Glen. Favoured habitat is slow-flowing unimproved rivers, particularly when meandering through meadowland. In some areas it can be very common, a particularly good place being on the Witham adjacent to Bassingham churchyard. On occasion it has been recorded from central Lincoln. Nationally it is widespread through England and Wales and common where suitable habitat prevails.

Emeralds (Lestidae)

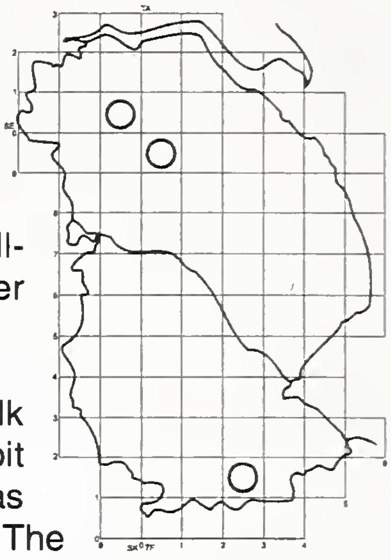
Metallic green bodies, clear wings and an unusual habit of settling with their wings half open immediately identify this group.

Emerald Damselfly ***Lestes sponsa***
Needs great care to separate from the scarce emerald damselfly *Lestes dryas*, both species being predominantly metallic green.



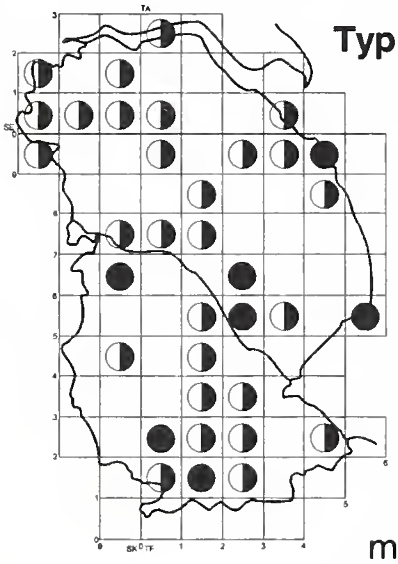
Comparisons of details such as the **extent of the powdery-blue** on the abdominal segments of the males and the shape of the **females first abdominal segments** have to be noted, as well as the **shape of the pterostigma** in the wings. Even then, identification can only be confirmed by examination of the **genitalia**, details outside the intention of this article.

This is a common and widespread species nationally, utilising a wide range of habitats, tolerating eutrophic and brackish conditions, although it shows a preference for shallow, well-vegetated areas. Its apparent absence from the south-west and north-east of the county is something of a mystery. Records from these areas would be most useful.



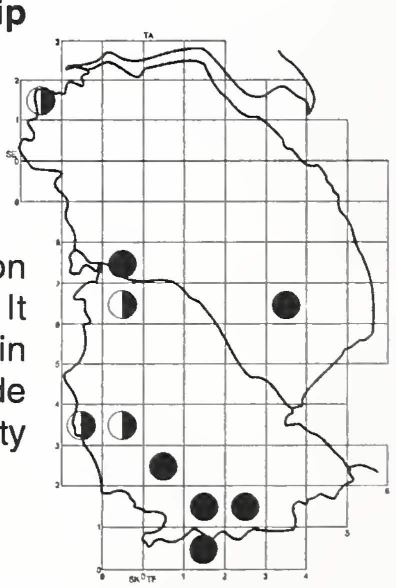
Scarce Emerald Damselfly *Lestes dryas*
Currently extinct in the county, only three records exist. Nationally, the species is rated Red Data Book Category 2 - Vulnerable. Rumoured to be nationally extinct in the 1970's, it's fortunes have improved somewhat and it can be found in Essex and Norfolk, although its preference for shallow water and well-vegetated ditches makes it vulnerable to drought, falling water tables and agricultural 'tidying'.

The county records, all from the 1950's were from Black Walk Nook, Messingham and Cowbit Wash. The specimen from Cowbit Wash, found on the 9th September 1956 by John Redshaw, was confirmed by Cynthia Longfield, the doyen of British Odonata. The specimen now resides in the Natural History museum, Kensington. In 1983 reference was made to a record of this species from New Bolingbroke (Chapman and Wilson, 1983). The criteria used for identifying nymphs are not reliable and the record has not been accepted nationally. It is therefore not included in the county records. Similarly no evidence exists for their Fiskerton-Bardney records and they remain unconfirmed.



Typical Damselflies (Coenagrionidae)

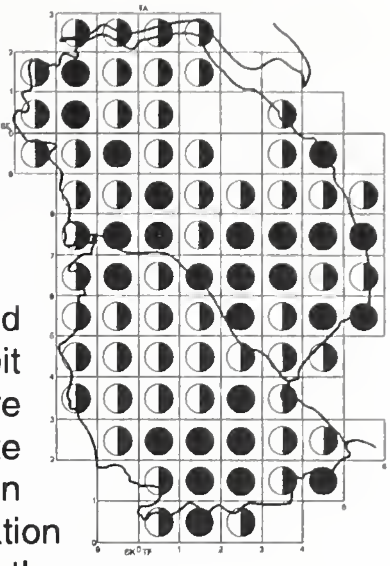
Large Red Damselfly *Pyrrhosoma nymphula* (plate 6)
Quite unmistakable as it is **the only red damselfly** in the county. It is also the first of the dragonflies or damselflies to emerge each year, which it does at the end of April or early May, staying on the wing until early July. It is found in a wide range of habitats across the county and is reasonably common. Nationally it is widespread and common.



Red-eyed Damselfly *Erythromma najas*
Superficially like the much more common Blue-tailed Damselfly, males can be easily distinguished because of their **red eyes**, the **blue abdominal tip is right at the end of the body** and it has **no antehumeral stripes**. The female has **no blue abdominal tip** and the **eyes are dull red.** It has a robust appearance for a damselfly and is a powerful flyer. The males in particular habitually sit on floating pondweeds and water-lilies.

It is a rare insect in the county, only found at two sites in the Lincoln area, parts of the Grantham Canal, Deeping pits, Baston Fen, Crowland, Bourne Woods, Revesby and Crowle Brick Pits. It is on the wing from mid-May to August. Nationally it is common in some south-east and midland counties, and is rarely seen outside this area. Recognised in the Lincolnshire Trust's Biodiversity Strategy as a county endangered species (Smith, 1996).

Blue-tailed Damselfly *Ischnura elegans*
Distinctive due to being **mainly dark, with a single blue band close to the end of the abdomen, on segment 8. Blue antehumeral stripes** are present. The 'normal form' female colouration is sometimes replaced with lilac or orange.

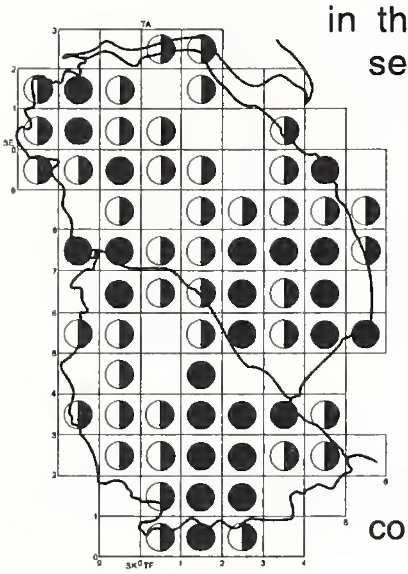


It is the most common of the county's Odonata, being adapted to a wide range of habitat types and water conditions, including being the most pollution tolerant, so on occasions will be the only species present. It is a frequent coloniser of garden ponds. The flight period is from the end of May to September. Nationally it is common throughout lowland Britain.

The three remaining species comprise the typical and widely noted blue damsels, the males being identifiable at close range with a bit of practise and some degree of patience. The females are more difficult and will only be dealt with superficially here. Fully accurate identification of the species can only be achieved by examination of features such as anal appendages, as some degree of variation can be exhibited in the markings and colouration of both sexes of the three species. Space dictates that only typical forms will be discussed here.

Common Blue Damselfly *Enallagma cyathigerum*

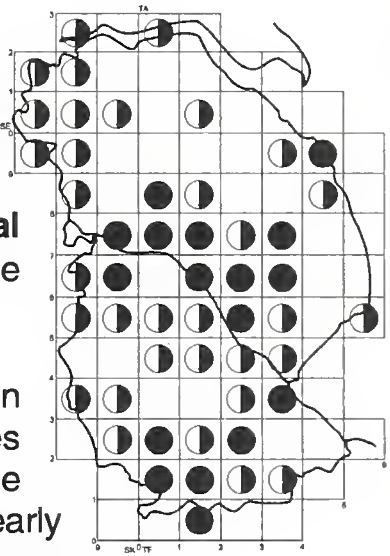
The male is typically blue and black. The **blue antehumeral stripes** appear **broader** than in the *Coenagrion* species. The mark on the second abdominal segment is a **black roundish spot with a stalk** descending from it. The usual female form is dark with dull green replacing the blue areas of the male. Careful observation will reveal a **ventral spine** projecting from segment 8, absent in female *Coenagrion.*



This is a common and widespread species in the county, second only to the blue-tailed damselfly in abundance and distribution and can tolerate a wide range of water conditions, sometimes occurring in huge numbers, appearing almost as swarms over the water surface and often well out into the middle of largish lakes. It is on the wing from late May to early September and is common and widespread nationally.

Azure Damselfly *Coenagrion puella*

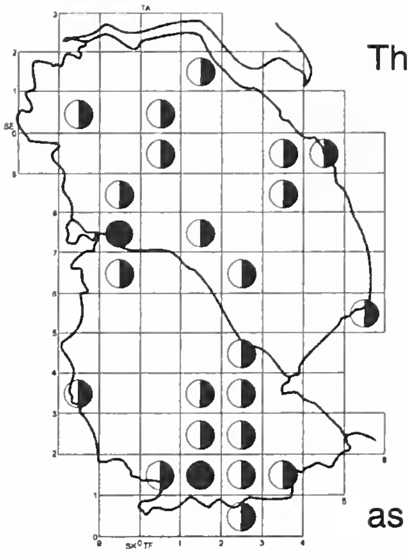
Again the male is blue and black, with **narrow blue antehumeral stripes**. The mark on the 2nd abdominal segment is a **black, thin unstalked 'U' shape**. The typical female form is very similar to the common blue damselfly, but has **no ventral spine**. Another female form closely resembles the female variable damselfly, so care must be taken with their identification.



Whilst widely distributed in the county, it is not always present in big numbers, appearing to be more common in the south. It utilises a wide range of habitats from garden ponds upwards and is on the wing from mid-May to the end of August, but is best looked for in early summer, before numbers of the common blue damselflies build up. It is widespread and common over most of England and Wales into southern Scotland.

Variable Damselfly Coenagrion pulchellum

The most uncommon of the blue/black damsels, separated from the previous two species in the male by the 2nd abdominal segment mark being a **thick black 'U' shape with a descending stalk.** The **antehumeral stripes** are commonly **reduced to exclamation (!) marks**. The typical female form is has blue on the body, not green, and a mercury mark on the second abdominal segment but, as mentioned previously, variations in females are commonplace and great care must be taken in accurate identification.



This species has undergone a dramatic decline over recent years, almost certainly due to agricultural pressure causing loss of habitat, mainly the lowering of water tables and intensive dyke management. Currently it is known from only two areas, Baston and Thurlby Fens and Boultham Mere at Lincoln. The Boultham Mere colony is substantial and of national importance.

It is a rare and declining species nationally, categorised as Nationally Scarce category B in NCC (1989), with strongholds in the marsh areas of Somerset, Sussex, Kent and Norfolk. Recognised in the Lincolnshire Trust's Biodiversity Strategy report as a county endangered species (Smith 1996).

Where to watch dragonflies

Dragonflies and damselflies can be found in many places across the county, from garden ponds and agricultural drains to the most pristine nature reserves. They are the most entertaining and spectacular of creatures, and I hope that this article will stimulate you into observing and recording them. But please send your records in!

The best area in the county to watch Odonata is around Lincoln, with its large range of diverse aquatic habitats. In the last 15 years all 20 breeding species have been reported from the gravel pit complexes of south-west Lincoln. Most notable of the sites are **Swanholme Lakes LNR** (SK96), with its acid pools currently supporting red-eyed damselfly and **Whisby Nature Park** (SK96), where a variety of habitats regularly support large numbers of up to 12 species, but historically all 20 current breeding species have been recorded. Other good Lincoln sites are **Boultham Mere** and the drain alongside it (SK97), particularly for the strong colony of variable damselfly and **Burton Pits** and its associated drain (SK97) for a wide range of species.

Other notable dragonfly sites across the county, again ironically all man-made ex mineral workings are at **Messingham Sand Quarry** (SE90) in the north, and the **Kirkby on Bain Pits** (TF26) in the centre.

Remnant patches of lowland heath in the Woodhall Spa area, particularly **Kirkby Moor** and **Moor Farm** (TF26) are also excellent and are well worth searching for the heathland species, common hawker and black darter. The most exceptional heath area is **Crowle Waste** (SE71) (plate 7), where these two species are regular. This area and adjacent **Thorne Moors** (SE71) in Yorkshire hold important historical records. Other sites in the area such as **Epworth Turbary** (SE70) help to make this a rich and worthwhile place for the dragonfly watcher and may hold some exciting potential for re-discoveries.

The coastal strip holds a number of suitable brackish and freshwater pools. **Gibraltar Point** (TF56) (plate 8) is probably the best recorded site in the county, and is subject to migrants and atypical occurrences. The recent unprecedented influx of yellow-winged darters from the continent in 1995 and records of species such as banded demoiselle and black darter keep Eric Blood on his toes. The **Sea Bank Clay Pits** (TF58), **Saltfleetby-Theddlethorpe Dunes NNR** (TF49) and **Donna Nook** (TF49) are all worth a visit, but take your field guide and be prepared for the unexpected.

The south of the county is limited in sites in some areas due to agricultural improvement, but as the south of Britain supports a larger number of species this tends to be the area where species spread tends to be first recorded. Some 'hot-spots' are the **Grantham Canal** (SK83) and rivers such as the **Witham** above Lincoln (several squares) and the **Glen** past Thurlby (TF11), both good for banded demoiselles.

I would like to finish with one site in particular, which perhaps sums up the fortunes of the Odonata in Lincolnshire. Three hundred years ago **Baston Fen** (TF11) would have been part of the vast wetlands of the Fens, where uncountable numbers of dragonflies would have existed. Current populations must be mere fractions in comparison, but enough survived to enthuse John Redshaw, who is the Lincolnshire trust's volunteer warden at the site, to become county recorder.

Only tiny fragments of the fens now survive, but the creatures that live there, including the dragonflies, are finally getting some serious recognition. Exciting fenland recreation projects and a greater awareness of the value of restored mineral workings as 'wetlands' are creating new, very suitable habitats. The formation of the British Dragonfly Society in the 1980's, the recent production of the national Dragonfly atlas (Merritt, Moore & Eversham (1996) and a number of county atlases, including, before long, our own, means the future of these splendid ancient insects is on an upturn.

Dave Bromwich, the 103rd President of the Lincolnshire Naturalists' Union in 1996/97 has been the site manager at the Whisby Nature Park and Whisby Pits Nature Reserve near Lincoln since 1991. Most of his career has been spent in Lincolnshire, working at Gibralter Point in 1980 and between 1986 & 1989 and at Tetney Marshes in 1982, with spells on Mull in between. He presented this paper as his Presidential Address at Bishop Grosseteste College, Lincoln on 22nd March 1997.

Acknowledgements
This article would have not been possible without help from: John Redshaw, Eric Blood, Kevin Wilson, Steve Gray, Alan Chapman, Neil Pike, Phil Porter and the late Mac Harvey. Thanks are also due to Barrie Wilkinson for access to the Lincs Trust slide library.

I must also thank all the naturalists, past and present, who have shared my interest in these creatures and have noted down their observations. Without them the distribution maps would be rather free of dots!

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A NEW SPIDER FOR BRITAIN FROM LINCOLNSHIRE?

Roy Kent

Scunthorpe seems to be unique in the world of spiders. Not only have we a first county record, (see Natural History in Lincolnshire in 1996 - Spiders) but it may well be that we have a first in the country, the comb-footed spider *Uloborus plumipes* (Lucas, 1846), a 2.5-5mm long spider with conspicuously hairy knees and shins in the female. It is native to Africa and seems to have been brought into this country on an indoor plant, possibly from the greenhouses of Holland. The record was not merely of a single specimen, but literally scores, all from the hothouse of the Stephen Smith Garden Centre in Scunthorpe.

The spider was first noticed by an employee, Julian Addy, in 1989. He sent it to the British Museum who identified it and returned it as being of little significance and probably a one-off. It was left to the sharp eyes of Rex Johnson to spot it again in 1992. He collected a specimen which I posted for identification to Mike Roberts in Scotland in March 1992. It arrived, somewhat the worse for wear, in January 1993. Dr Roberts could recognise it as being of the family Uloboridae and assumed it was the rare species that we have in the country *Uloborus walckenaerius.* Recently Dr Roberts, while studying European spiders, came upon large numbers of the African species *Uloborus plumipes* in Dutch greenhouses where it is used as a biological control agent for whitefly. He enquired if I still had the dilapidated specimen from 1992, asked if I would send it for further perusal and suggested that Rex and I pay a visit to the garden centre in the hope that we might find a better specimen. The staff at the centre were very obliging and we were able to collect a dozen spiders, plus two egg-cocoons in a matter of minutes, and a few specimens fro Rex to photograph. Dr Roberts has confirmed that the spiders are *Uloborus plumipes.*

Uloborus plumipes is a cribellate or comb-footed spider which constructs a horizontal web, placing a stabilimentum of cribellate (very finely combed) silk across the diameter of the web. This is a band of conspicuous, bluish-white silk and is thought variously to reflect ultra-violet light and attract insects to the web to be captured, or to be sufficiently conspicuous to deter birds and very large insects from flying into the web and destroying it. The spider sits under the web waiting for its prey which it binds up in silk. It is one of the few spiders which has no poison glands.

Mike Roberts is publishing the occurrence of new spider in the bulletin of the British Arachnological Society and has sent out a call to all members of the British Arachnological Society, asking them to visit their local garden centres to check whether *Uloborus plumipes* is widespread or unique to Scunthorpe. Incidentally - the garden centre has had no problems with whitefly for the past ten years!

Roy Kent is Spider Recorder for the Lincolnshire Naturalists' Union

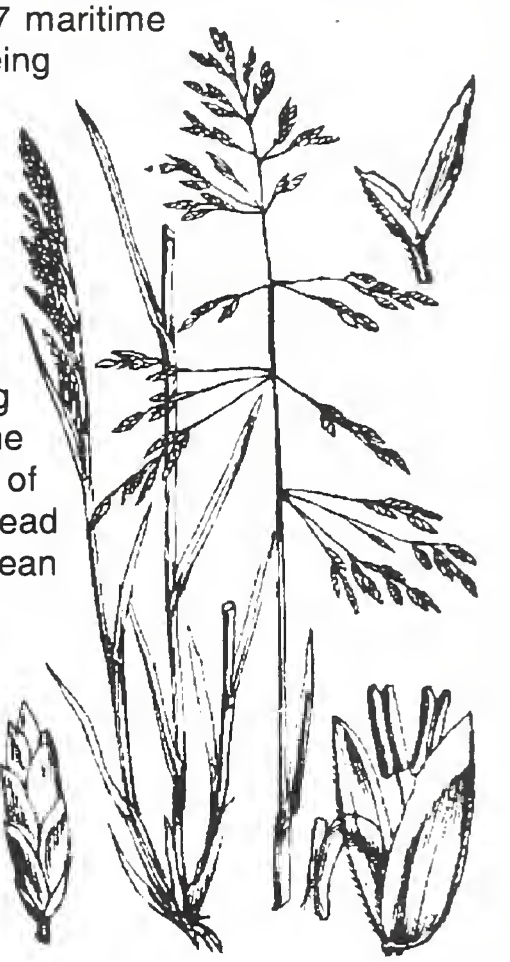
REFLEXED SALTMARSH GRASS *Puccinellia distans* (JACQ.) PARL. INLAND IN E LINDSEY, ON THE A & B ROAD NETWORK

Tim Smith

Introduction

In the last twenty-odd years, the botanical literature has reported the spread of maritime plants on inland road-sides due to the widespread use of de-icing salt, possibly combined with increased volumes of traffic facilitating transport of seeds in vehicles' slipstreams.

The literature (eg Scott, 1985) reveals no fewer than 17 maritime species recorded from British roadsides, with one group being long established invaders, such as Danish scurvy-grass *Cochlearia danica*, whereas a second group have only recently become members of verge flora, e.g, grass-leaved orache *Atriplex littoralis*, sea couch *Elytrigia atherica* and sea purslane *Atriplex portulacoides*. One member of the former group is reflexed saltmarsh grass *Puccinellia distans*, first noted 'rampaging through the countryside' in the 1970s (Leach & Rich, 1989), expanding from its usual habitats of upper saltmarshes, rocks by the sea and sea-walls (Hubbard, 1968). The spread of *Puccinellia distans* in Britain has been mirrored by its spread in Belgium and Germany, and doubtless in other European countries, and some American States.



Reflexed saltmarsh grass *Puccinellia distans*

Historically, *Puccinellia distans* has occurred in Lincolnshire only sparingly 'on saline mud in estuaries' (Gibbons, 1975) and on bare saline places on and behind sea walls (*pers obs*). Either its distribution had apparently not changed, or its spread inland was overlooked in the decade following the publication of the Lincolnshire Flora, because *Puccinellia distans* does not feature in the Flora's Supplement (Gibbons & Weston, 1985), although its presence along the A1 in South Kesteven was noted by Scott (1985).

The present survey was undertaken in an attempt to ascertain the more up-to-date picture of the distribution of *Puccinellia distans* inland in the East Lindsey District of Lincolnshire. This part of the county was chosen as it is the one in which the author lives and in which he most frequently travels. As for the remainder of the historical county of Lincolnshire, it is hoped that this paper will stimulate other botanists to look for *Puccinellia distans* and other maritime plants on the inland road network, such that a county-wide picture of distribution will emerge, ready for the Atlas 2000.

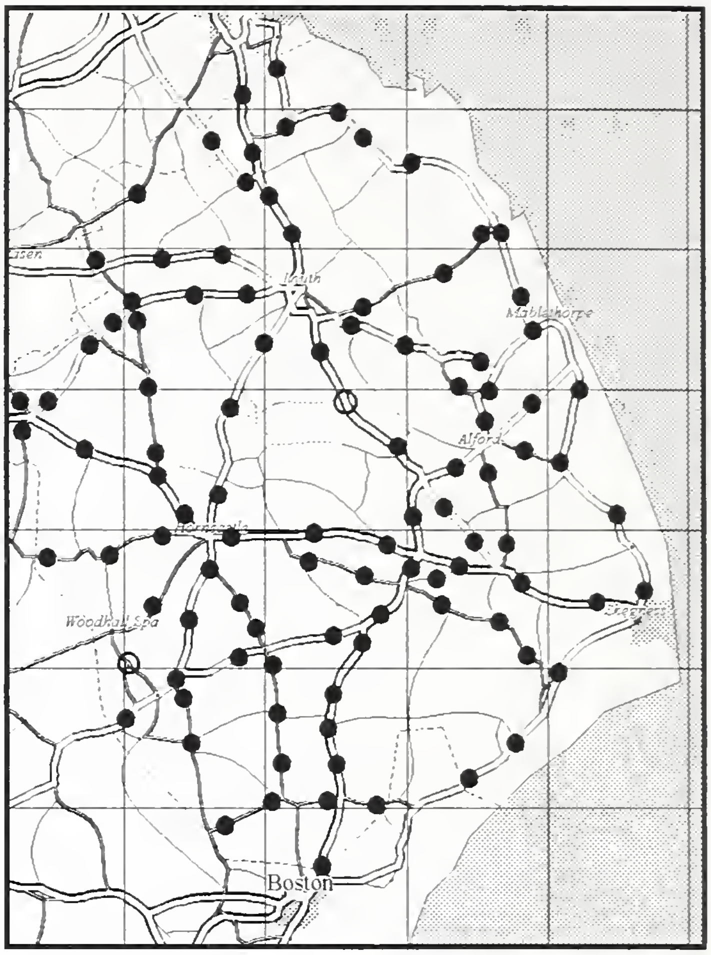
Survey method

Using the 1:50,000 OS Landranger maps, a series of sample sites were marked on the network of A and B roads in East Lindsey at approximately 5km spacings. Each site wasa 50m length of verge on both sides of the carriageway. Each site was visited and examined once either between mid-June and mid-July 1995, or between early June and late June 1996 and the presence of *Puccinellia distans* noted, together with the road verge habitat(s) in which the species occurred. Also note was made of the other species associated with *Puccinellia distans*. Road verge habitats were:

a. grass verge behind kerb and path
b. grass verge behind kerb only
c. grass verge only, with edge level with, or just above or below the tarmac
d. grass verge only, but considerably above the level of the tarmac ('steep earth bank')

Results
The map shows the occurrence of *Puccinellia distans* at the sample sites on the A and B road network in East Lindsey. Out of 107 sites visited, the species was found at 105 (98%), with its presence noted in 69 sites out of 70 on the A roads (98%), and in 37 out of 38 on B roads (97%).

The other species most often associated with *Puccinellia distans* was couch grass *Elytrigia repens*; other plants occasionally present were knotgrass *Polygonum aviculare*, greater plantain *Plantago major*, perennial rye-grass *Lolium perenne*, silverweed *Potentilla anserina*, annual meadow-grass *Poa annua*, common reed *Phragmites australis* and halberd-leaved orache *Atriplex prostrata*, although *Puccinellia distans* sometimes occurred in pure stands.



Reflexed saltmarsh grass along roads in East Lindsey

● Present ○ Absent

The verge habitat in which *Puccinellia distans* was most frequently recorded was (c): a grass verge without kerb or path, where the edge of the verge was at or close to the level of the tarmac. 98 records (91%) were from this habitat and only 5 records (5%) were from habitat (b) alone; and at 4 sites (4%) *Puccinellia distans* was present in both habitats (b) and (c), where the sample site length of road was partly lined with a kerb and partly not.

Discussion
The survey shows *Puccinellia distans* is distributed virtually throughout the A and B road network of East Lindsey and if the site records are translated into those for 10km squares, the species is shown to occur in every square which has a significant proportion of its area in the District. This is a considerable expansion of distribution when compared to the map in Scott (1985), which shows *Puccinellia distans* in Lincolnshire only along the A1, and to the picture given by Perring & Walters (1990), which shows the 'original' coastal distribution of the species in the county.

Puccinellia distans tends to occur on the verges wherever the habitat conditions are suitable; in places this results in a continuous band of the grass at the edge of the road for several tens of metres, yet, elsewhere, only scattered plants can be found (for example, in worn gateways into fields). Thus although it occurs throughout the District, it is by no means constantly present along every metre of verge for several reasons, as follows. Well paved areas tend not to provide suitable niches for the plant; roads on steep slopes allow the salt-laden water in winter to run down the tarmac parallel to the verge and not into it; on verges with a considerable 'earth bank' (often 15-20cm high above the tarmac) the earth face is probably too sheer for seedlings to become established whereas the vegetation on top of the bank is probably too remote from a sufficient salt influence for the correct habitat conditions to exist; and even an otherwise suitable verges there may be insufficient disturbance to produce the bare soil necessary for seed germination.

At the one B-road site lacking *Puccinellia distans*, the verges have either tall 'earth banks' or kerbs, and on the A-road site, the road is on a considerable slope and the verges are confined by kerbs, so the water runs away. The unsuitability of 'earth bank' verge edges for *Puccinellia distans* has been noted by Coombe (1994) in Cambridgeshire. He also cites efficient removal of salt-laden water from the road as being not conducive to the establishment of the grass.

Puccinellia distans is an annual grass which typically occurs on disturbed, open ground, occasionally wetted, which becomes hypersaline in summer (Adam, 1990). On road verges, the factors which operate to mimic these upper saltmarsh conditions are disturbance (by traffic running over the verge edge, from roadworks, from cleaning out - or making new-grips, accidents, etc) and input of salt-laden water in winter from spray from vehicles' tyres, although more significantly may be run-off of water from the tarmac, perpendicular or roughly so to the road, into the verge. The disturbance produces a bare substrate on which *Puccinellia distans* seeds can germinate and the input of salt provides the species' other habitat requirement. The salt input also reduces or eliminates competition from non-halophytic vegetation growing on the verge edge, thus helping to keep conditions open. It is not however a substitute for physical disturbance, as salt-tolerant vegetation still occurs: the species listed above as associated with *Puccinellia distans* are all known from maritime vegetation types, such as saltmarshes, brackish grasslands and swamps (Rodwell, 1992, 1995).

Just as the upper saltmarsh habitat of *Puccinellia distans* becomes naturally hypersaline through a cycle of tidal inundation, and evapo-transpiration, with rainfall superimposed (Adam, 1990), the road verge habitat exhibits a similar mechanism, which helps to explain why *Puccinellia distans* persists into the year long after the last application of de-icing salt in late winter. This mechanism operates as follows. The verge edge becomes saturated with salt-laden water through spray and run-off in the winter. As the spring and summer progress, a cycle of dilution of salt in the soil, due to freshwater rainfall, and concentration, due to evapo-transpiration takes place. After each significant rainfall, the salt in the upper verge is washed down through the soil profile, but afterwards during a period of drying weather the salty water is drawn upwards to the surface by capillary action and at the surface itself, the water evaporates leaving a white salt crust on the surface. Thus the hypersaline environment is created and the white crust on the verge edge can easily be seen from a moving car. The salt dissolves and is worked back into the soil after the next rainfall, only to reappear on the surface after the next dry spell. The cycle is repeated in this fashion until the onset of the next winter, when fresh salt is added to the system.

Are there, or have there been, any implications for the conservation of the non-halophyte road verge flora on the A and B roads of East Lindsey as a result of the spread and continued presence of *Puccinellia distans*? The answer in both cases is probably 'no'. *Puccinellia distans* is unlikely to spread from the verge edge into the body of the verge, where flora of considerable conservation value can occur, if there is no disturbance. This is because it needs open ground to colonise, also the body of the verge is well removed from the hyper-saline edge conditions. It is unlikely that any non-halophytic flora of interest on the verge edge has been displaced by the invasion and spread of *Puccinellia distans*. The edge of the verge, even without salt input, is a harsh environment and one not likely to support 'delicate' species, instead it tends to support coarse ubiquitous plants able to tolerate the conditions, eg couch grass *Elytrigia repens*, creeping bent *Agrostis stolonifera*, perennial rye-grass *Lolium perenne* and annual meadow-grass *Poa annua*.

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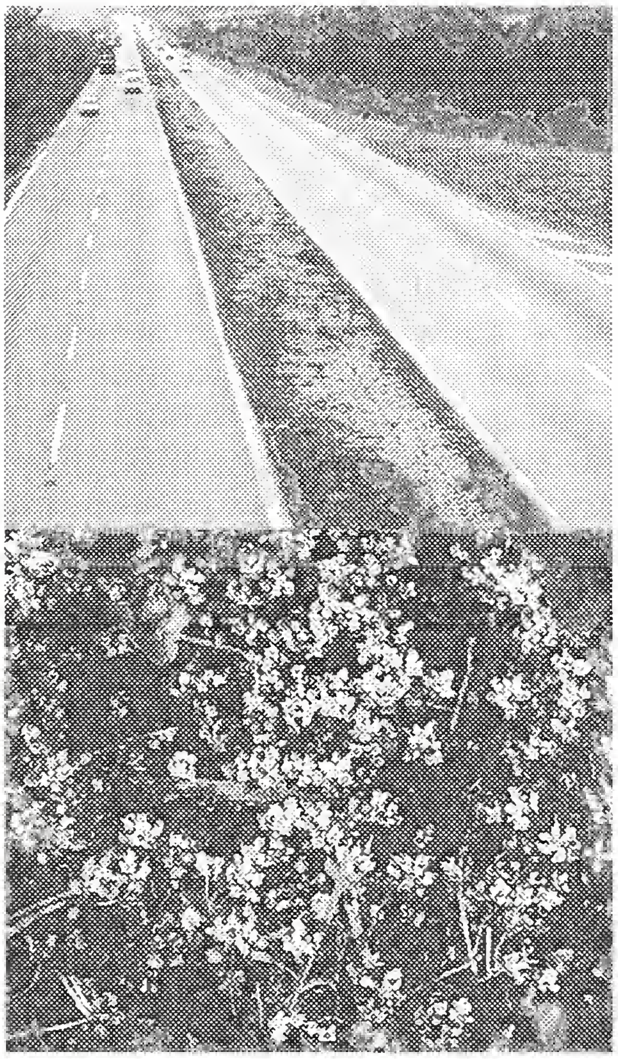
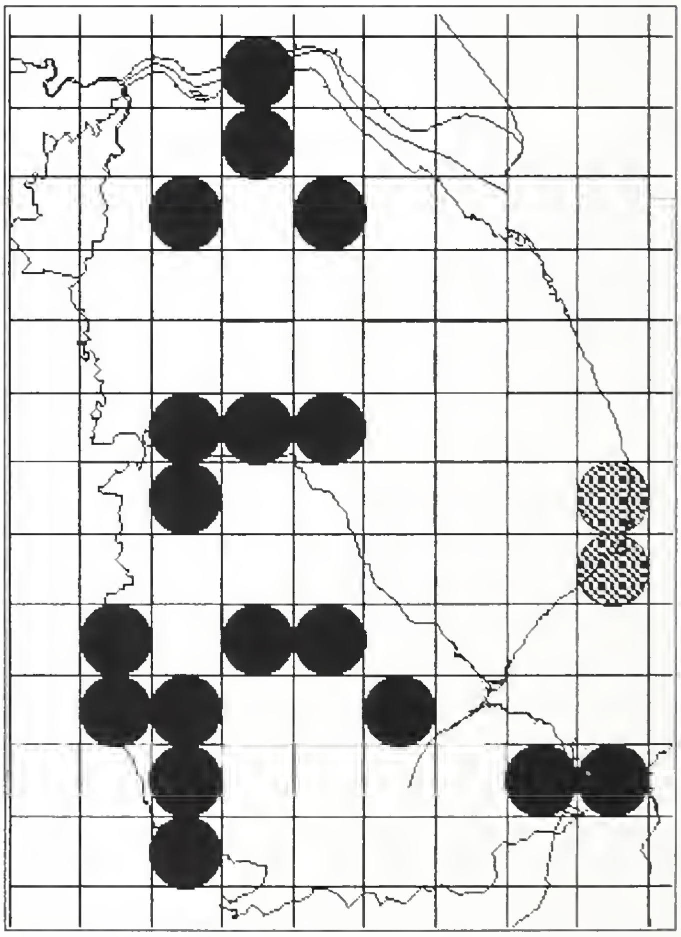
DANISH SCURVY GRASS ON INLAND ROADSIDES

Irene Weston

Danish Scurvy grass *Cochlearia danica* L. previously known as a coastal species in Great Britain and only from Gibraltar Point in Lincolnshire, has recently been recorded in many inland parts in the county and throughout Britain on the verges and central reservations of salt-treated roads.


The A1 from the A46 Newark Bridge. The pale mark along the central reservation is all *Cochlearia danica*

Lincolnshire roads which support this species include the M180, the A1, A15, A158, A17, A46, A57, A1101 & the new Lincoln Relief Road.


Distribution in Lincolnshire. Shaded circle denotes initial coastal sites.

DYER'S MADDER *Rubia tinctorum L.* - REDISCOVERY OF A LOST BRITISH DYE PLANT IN SOUTH LINCOLNSHIRE

Irene Weston & Phil Porter

The Discovery - Phil Porter

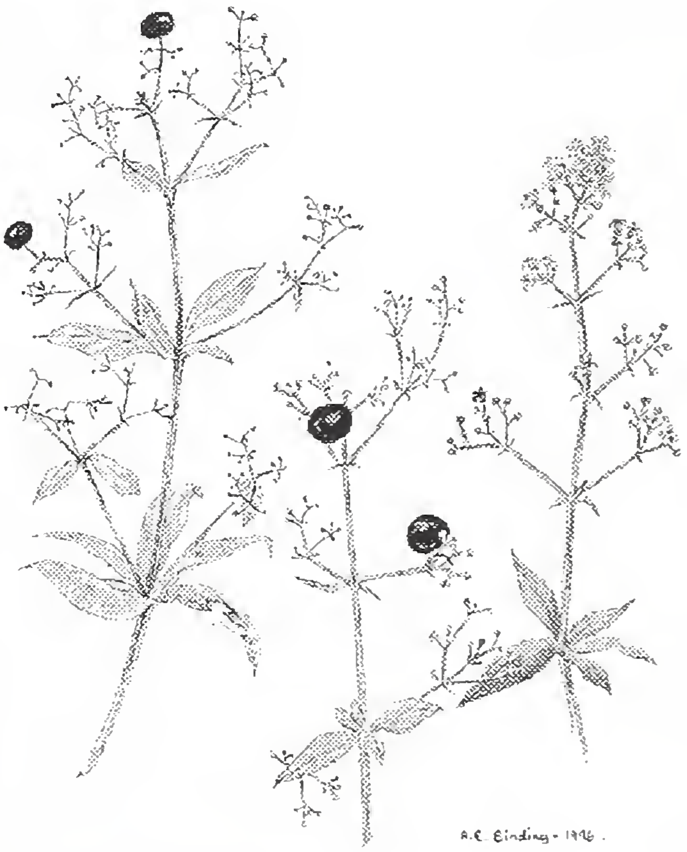
On the 15th August 1996, the Lincoln area group of the Trust gathered at Boothby Graffoe for an evening walk around the parish to be followed by a moth trapping session. Right at the end of the walk I saw a scrambling plant growing through a dry stone wall to a height of around four feet (plate 9). The wall did not surround a garden, just a small area of grass, so I did not write off the sighting as an unfamiliar garden plant.

Although I had never seen it before, I thought that I recognised the plant as wild madder. I hadn't realised there was more than one type of madder, but I did know that wild madder did not belong anywhere near Lincolnshire. However, using Geoff Taylor's field guide, the typical 'lady's bedstraw' flower heads, the leaf arrangement, and the barbed bristles on the stem and underside of leaves, seemed to confirm our identification.

Geoff alerted the L.N.U. grapevine locally and the next day Allan Binding was on the phone to confirm the location to take photographs. I was then able to sit back and receive periodic updates as Allan and his wife Annette joined forces with Rene Weston to ferret out the plant's true identity - quite a lengthy procedure, I believe. As unlikely as wild madder *Rubia peregrina* would have been, it was more amazing to learn that no-one had recorded dyer's madder *R. tinctoria* anywhere in Britain since the 1930's.

The Plant - Irene Weston

Madder or Dyer's Madder *Rubia tinctorum*, a relative of the bedstraws and, of course, wild madder, *Rubia peregrina,* is native to southern and eastern Europe and was formerly cultivated in Britain in order to extract a dye from its roots. Its relative, wild madder is southern and western plant in Britain, mainly of coastal grassland.


A.C. Binding - 1996.

Madder *Rubia tinctorum*

The dye, known as 'Turkey red' was used for a number of purposes before the discovery of the aniline dyes in the middle of the last century, in particular for military uniform trousers and kepis (hats) and also the Turkish fez. Two dyes were produced - 'madder red' - an extract of the whole of the colouring matter from the plant (red and fawn mixed) and 'Turkey red' - using only the separated red matter. Originally imported from the Levant, it was not until 1790 that the art of dying with Turkey red was introduced into Britain and a factory was set up in Glasgow exclusively for this purpose. The plant and its dye was known and used by the Greeks and the Romans who also used it as a medicine - Erythrodanon. Pliny called it *Rubia*, its generic name, meaning red. Its specific name, *tinctorum*, means "of the dyer".

Madder escaped from cultivation and survived as a scarce casual, but was thought perhaps to have become extinct. Clapham et al (1962) described it "still occurs as a casual", whereas Stace (1997) stated "was formerly grown for its dye and used to occur as a casual and escape - but no longer". Clement and Foster (1994) describe it as "pre 1930 only". If not extinct, it was recognised as an obviously rare plant and had never been recorded in Lincolnshire.

At the Boothby Graffoe site, the plant was flowering profusely and conspicuously, covering two or three metres of an old Jurassic limestone wall, one metre high, in the lane at one end of the village and growing over into the pasture beyond. The wall partially encloses a small grassland area which had previously been part of a farm-yard and garden and had ivy growing over it on both sides of the madder, the bright green shiny ivy leaves contrasting sharply with the yellow-green of the madder leaves and flowers. I was able to identify it as *Rubia tinctorum* and had it confirmed by J Clement.

The plant flowered into October with masses of small light yellow flowers but the seed set was very low, The small fruits are succulent berries, red-brown eventually turning to black, and normally have one seed but four double-seeded fruits were counted. Its deciduous nature was apparent very early on as the older stems and leaves turned straw-coloured and became brittle.

How such a large plant had been missed by botanists for such a long time is a mystery. It was known locally for over 30 years in that spot and known as 'cleavers', a name more usually applied to goose-grass *Galium aparine*. The dead material is tidied up by the landowner each autumn and the plant grows up strongly again the following year. Its origin too is a mystery - possibly a relic from the garden of a dyer or weaver. Whatever its origin, it is a most significant record.

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Phil Porter is Lincoln Green Environmental Partnership Officer for the Lincs Trust and is President of the Lincolnshire Naturalists' Union in 1997/98.

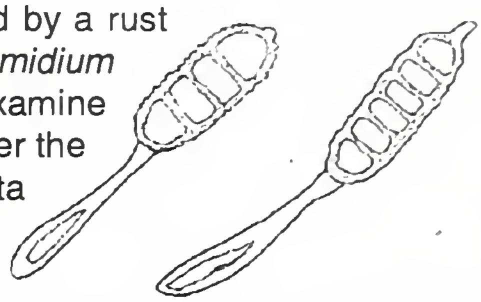
STUDYING THE NOT-SO-OBVIOUS: RUSTS, SMUTS & MILDEWS

Ken Rowland

Over the last year or two my interest in fungi has gradually moved to some of the less obvious and, on the surface, duller looking families of the fungi, namely the rusts, smuts and powdery mildews. This is mainly, I suppose, because they are host specific, which helps enormously with identification (providing you get the host right - I have had my wrist slapped twice this year for misidentification!) but also because they are most interesting when viewed under the microscope. This is another fascinating pastime; the more you look at nature under the microscope the more interesting it becomes. My specialisation has to run parallel to general mycology studying the mushrooms, toadstools, puffballs and brackets that crop up during most of the LNU Field meetings. Members always seem surprised when they see me turning over leaves and grass blades to look at the underside.

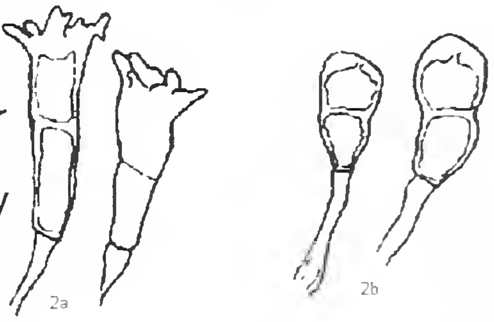
There are something over 5500 species of rusts. "British Rust Fungi" by Wilson and Henderson runs to 500 pages, all descriptions of species, but indispensable for the identification of Rusts This book is unfortunately out of print and now very valuable.

The purple patches on bramble leaves may not all be autumn colours; some, or probably most in some briar patches, are caused by a rust fungus *Phragmidium violaceum* - or could it be *Phragmidium bulbosum?* The only way to tell is to take a leaf home and examine the black fluffy patches on the underside - the spores - under the microscope and see if they have three, four or five septa (cross divisions) *(P. violaceum)* or four to seven *(P. bulbosum).* Yellow stripes on the stems and yellow dots on the leaves of bramble in the spring are more than likely *Kuehneola uridinis,* another rust specific to bramble.


Spores of *Phragmidium violaceum* (left) and *P. bulbosum* (right), showing the number of septa

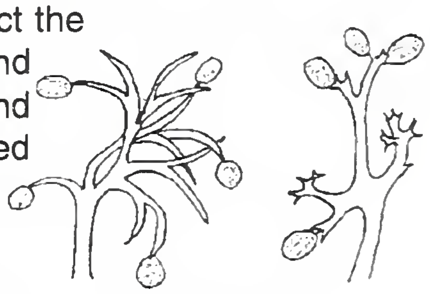
Orange or brown stripes sometimes appear on grass leaves. These are another rust; more than likely *Puccinia graminis* or *P.coronata.* On other plants, small brown to black spots may occur on the undersides of the leaves. These are again likely to be a species of *Puccinia* but it is difficult to say which as there are about 3000 species in the genus.

Rust spores usually have a main body and a tail, for example *Puccinia coronata* and *P.polygoni-amphibli var convolvuli* (plate 10). The latter was a new county record in 1996, turning up twice in Lincoln and in Spalding. Normally these spores show only slight differences in shape but *P. coronata* exceptional. I often haven't much enthusiasm for rusts produced for identification at meetings when it is not obvious what species the host is. Most Puccinia spores look very much like that of *P.polygoni-amphibii* and with 3000 species of *Puccinia* I only look at ones where the host is identifiable.

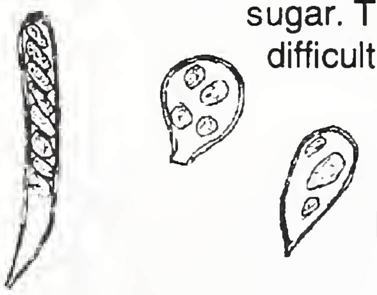


Spores of *Puccinia coronata* (left) and *P. polygoni-amphibii* var *convolvuli* (right)

Mildews are all important parasites in the plant world. Some are very destructive, as with the vine and gooseberry mildews, others do not seem to affect the host too much as with *Microsphaera alphitoides* on oak and *Erysiphe heraclei* on the various umbellifers. These can be found just about everywhere but are generally not noticed or dismissed as just another mould on the leaves and stems of plants.

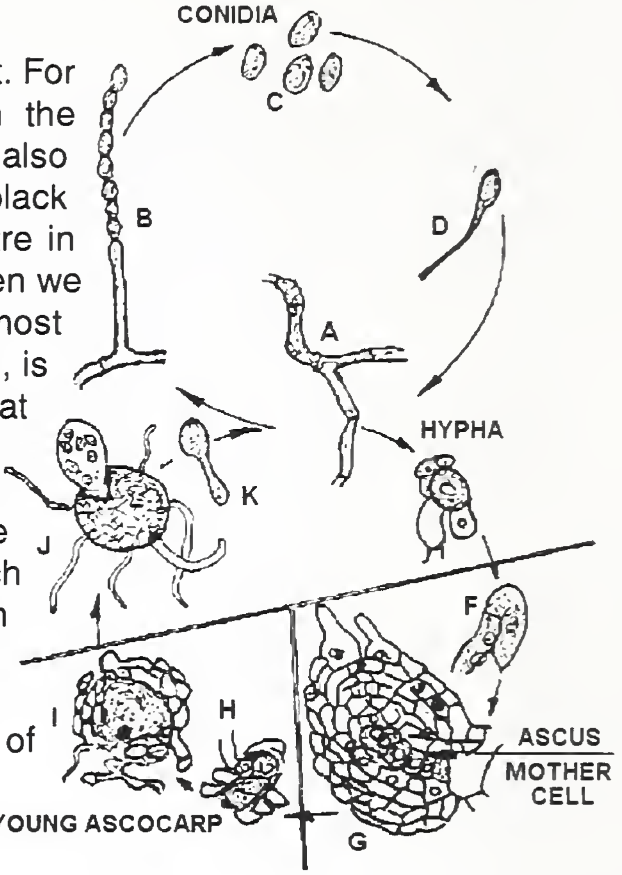

Downy mildew spores

There are two main types - the downy mildews. These belong to the group *Eumycota* and bear their spores naked on the mycelium and appear powdery, as if dusted with icing sugar. The mycelium permeates the host tissue. Downy mildews are very difficult and few amateur mycologists like myself can identify them and so they are rarely recorded.


Asci of typical ascomycete (Peziza) left and powdery mildew right

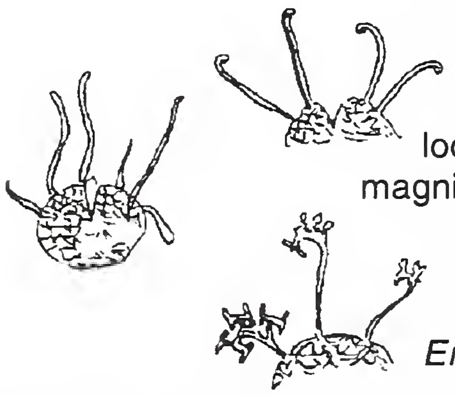
The powdery mildews - the *Erysiphales* - look more downy, rather like cotton wool in many cases. They are members of the ascomycetes (i.e. they are related to the cup fungi), producing their spores in asci. These are easier to identify and have a superficial mycelium and fruiting bodies called a cleistocarp.

There aren't quite so many of these with some 12 genera and about 100 species on the British list and they are more obliging in that most of them are not only host-specific and they have different microscopic characteristics. Although they have a very complicated lifestyle (shown simplified in the figure), stages 'A' to 'I' are neither readily seen or identified and so, for the purposes of this article, we will bypass them. The only stage readily seen is 'J' - the fruiting stage.

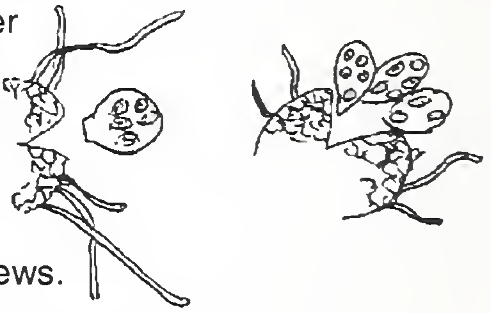


Life-cycle of a typical powdery mildew

All powdery mildews are parasitic on their specific host. For example *Erysiphe heraclei* will only be found on the Apiaceae - the Umbellifers. Some of these plants are also parasitised by downy mildews, but if small yellow to black fruiting bodies - cleistocarps - about half a millimetre in diameter can be seen on the underside of the leaf then we are certain it is one of the *Erysiphales.* By far the most certain way of checking, even when the host is known, is to look at the small hair, or root-like appendages that project, usually upwards from the fruiting body. These can be of various shapes and are very useful in identification, as also is the shape of the ascus, the number of asci and the number of spores in each ascus. The starting point is an accurate identification of the host plant, as most are specific at least to a genus or family of plants. We can then look under medium magnification to see if there are appendages and their shape. These may have no definite shaped tips, as in *Erysiphe* and *Sphaerotheca*, curled tips like a shepherd's crook in *Uncinula* and branched tips like TV aerials in *Microsphaera*. Failing any clear shapes of the appendages, then using a squash mount we can look for the number of asci in the cleistocarp. *Podosphaera* and *Sphaerotheca* have only one large ascus with six to eight spores, *Microsphaera* and *Erysiphe* have numerous asci with from two to six ascospores.



Cleistocarps of the Erysiphales - *Erisyphe* (left) *Sawadaea* (top right) & *Podosphaera* (bottom right)



Asci in the cleistocarps of *Podosphaera* and *Erysiphe*

Unfortunately there are no easy keys to the powdery mildews. None are readily available, although some are listed in Ellis and Ellis (1985) (out of print) and all the British genera are keyed by Ing (1990). Hopefully the latter will soon be available in booklet form from the British Mycological Society. In this are listed 12 genera and 84 species as British, with another 23 species recorded on introduced host plants. So far, we have records for 57 species and 8 genera in a total of 497 records for Lincolnshire.

Having discussed a very large number of species of fungus in a short article, I would ask members, when on your travels in Lincolnshire, that you collect specimens of the powdery mildews for the records. Please note the host plant and site, preferably with the grid reference. Leaves can be flattened between sheets of kitchen paper under a heavy object.

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Ken Rowland is the Fungus Recorder and Optics Officer for the LNU.

SUPPLEMENT TO THE BRYOPHYTE FLORA OF THE SPILSBY SANDSTONE

Tim Smith B.Sc.

Since the publication of the Spilsby Sandstone Bryophyte Flora (Smith, 1994), three more natural or near natural sandstone exposures have been found. The bryophyte flora of each of these extra sites was surveyed in March-April 1996 using the same method in the original survey. The new records arising from the additional sites are listed below and they largely constitute common species but also included are records for species which are rare in the county. Further, the survey has added three moss taxa to the flora itself (*Dicranowieisia cirrata*, *Racomitrium heterostichum* f. *heterostichum* and *Racomitrium heterostichum* f. *obtusum*). In the list, the order and nomenclature of hepatics follows that of Grolle (1983) and that of mosses follows Corley & Hill (1981).

Total number of sites surveyed for the bryophyte flora = 99
Total number of hepatics in the flora = 8
Total number of mosses in the flora = 51

Hepatics (number of additional sites)
Cephaloziella divaricata (1), *Lophocolea bidentata* (2) and *Lophocolea heterophylla* (1).
Mosses (number of additional sites)
Polytrichum piliferum (1), *Polytrichum juniperinum* (1), *Ceratodon purpureus* (3), *Dicranella heteromalla* (3), *Dicranoweisia cirrata* (1 and see below), *Campylopus introflexus* (1), *Tortula muralis* (2), *Barbula vinealis* (1), *Barbula cylindrica* (2), *Grimmia pulvinata* (1), *Grimmia trichophylla* (2 and see below), *Racomitrium heterostrichum* f. *heterostichum* (1 and see below), *Racomitrium heterostichum* f. *obtusum* (2 and see below), *Orthodontium lineare* (1), *Pohlia nutans* (1), *Bryum capillare* var *capillare* (2), *Bryum argenteum* var *argenteum* (2) *Aulacomnium androgynum* (2), *Amblystegium serpens* var *serpens* (1), *Brachythecium albicans* (2), *Brachythecium rutabulum* (2), *Brachythecium velutinum* (1), *Eurhychium praelongum* (2), *Isopterygium elegans* (1) and *Hypnum cupressiforme* s.l. (3).

Dicranoweisia cirrata is new to the sandstone bryophyte flora. It was found on an exposure of hard, unrotted sandstone in the open at one site at Asterby in the 1km square TF2679. This species is common and widespread in Lincolnshire (Hill, Preston & Smith, 1992) and is typically found as an epiphyte on ash, although rock and other hard materials are known to support the plant (Smith, 1978). This species does not rely on the presence of an acid solid geology for any aspect of its distribution or abundance in Lincolnshire, therefore according to the discussion in the original flora, it falls into Group 1 of the sandstone bryophyte flora ie species with little or no affinity with the sandstone.

Grimmia trichophylla was found on hard, unrotted sandstone in the open at two sites, nearly 900m apart, at Asterby in the 1km square TF2679. This species is rare in the county: the single record in the original sandstone bryophyte flora was the first post-1913 for Lincolnshire (Seaward, 1993) and the present two records therefore appear to represent only the second and third post-1913 county finds.

Racomitrium heterostichum f *heterostichum* is new to the sandstone bryophyte flora, as is *Racomitrium heterostichum* f *obtusum*. The former was found on hard, unrotted sandstone in the open at one site; the latter was recorded from a similar habitat but at two sites, with all the records coming from Asterby in the 1km square TF2679. These taxa fall into Group 2 of the flora (species with an affinity for the sandstone for the acid substrate it provides) and because of their scarcity, they belong with this Group's second sub-group. This is composed of a small number of species for which the exposures of Spilsby Sandstone represent their main opportunity to occur in the county, which is otherwise unsuitable. *Racomitrium heterostichum* s.s. has been recorded only once before from Lincolnshire, on sandstone at Mavis Enderby in the 1km square TF3666 (Seaward, 1990), although it was not refound at this locality by the original flora survey. Although the *Racomitrium* from Asterby are new to the sandstone bryophyte flora, they are not new to the county, instead representing only the second, third and fourth Lincolnshire finds.

Acknowledgements Grateful thanks are extended to Mr Stroude of Asterby House who freely granted access for the survey and to Tom Blockeel for his determination of *Racomitrium heterostichum*.

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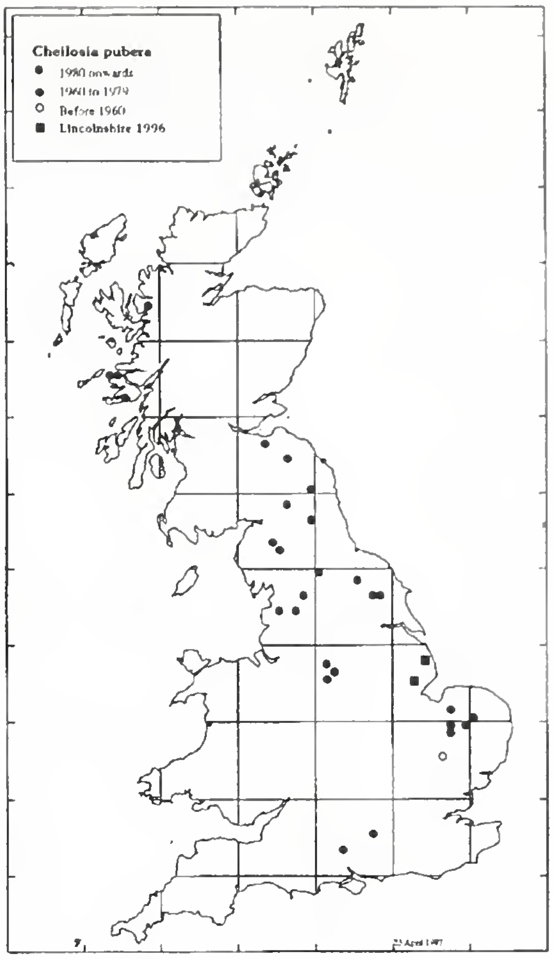
REDISCOVERY OF A LOST LINCOLNSHIRE HOVERFLY AFTER 109 YEARS

Jillian Binding

In 1996 I found an interesting old record of *Cheilosia pubera*, a small brassy black hoverfly that flies in May, last found in Lincolnshire in 1887 by Mr H Wallis-Kew at Burwell & Haugham Woods (Kew, 1888) and identified by Mr G H Verrall, the foremost hoverfly taxonomist at the time. This wood was the location for the May field meeting, just the right time of year for the species. Little is known about this species but it is most often found in base-rich marshes or fens (Stubbs & Falk, 1983). It is now regarded as Nationally Scarce (Falk, 1991). Roger Key thought that all fenland near to Haugham Wood had long since been destroyed and was not hopeful that it may still occur there.

When May 19th finally arrived I attended the field meeting, having completely forgotten about the significance of the site. It was a slightly chilly day, although sunny spells brought out a reasonable variety of insects. I was very pleased to find fifteen species of flies, not all hoverflies with three more to confirm at a later date. I thought the most interesting species for the day was *Ferdinandea cuprea*, a spring species usually found in good quality older woodland. There were a large number of unfamiliar, shining bronze *Cheilosia*'s flying down one particular ride in the wood, always nectaring on lesser celandine and kingcup but, due to the large numbers, I assumed it was a common species. It was not until late November when Roger Key phoned to say that he had had specimens confirmed as *Cheilosia pubera* by Dr Martin Drake of English Nature, and thought I would like to know about this rather rare species that I realised what these flies were. I immediately sought out the specimens from Haugham Wood and all except one proved to be *Cheilosia pubera*. I feel privileged to have seen a rare species in the numbers we saw that day, well over 100 individuals - the commonest fly of the day!

Later whilst identifying specimens from Great West Wood and Tattershall Thorpe Carr I came across another two more specimens of *Cheilosia pubera*, one from each wood. This was certainly the species of the year for me.



Distribution of *Cheilosia pubera*

Acknowledgement

I am grateful to Dr Stuart Ball, organiser of the hoverfly recording scheme for permission to reproduce the draft map of *Cheilosia pubera*.

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THE WATER STICK INSECT IN LINCOLNSHIRE

David Bromwich

The water stick *Ranatra linearis* (Order Hemiptera, Family Nepidae) insect is arguably one of the county's most spectacular invertebrates. When stretched out they can attain a length in excess of 80 mm.

On the 13th September 1996, during an educational visit to Whisby Nature Park, Amy Coe, a pupil at Bishop King School, Lincoln, caught a specimen of the water stick insect whilst pond-dipping in Thorpe Lake. I knew it was an uncommon species, but subsequent research of the LNU records revealed that it appeared to be only the third known - previous records being an unconfirmed record from Gibraltar Point in 1984 by Dr. D. Hill (Kirby, 1988) and Whisby Nature Park in May 1990 (Grebe Lake, B. V. Edwards)

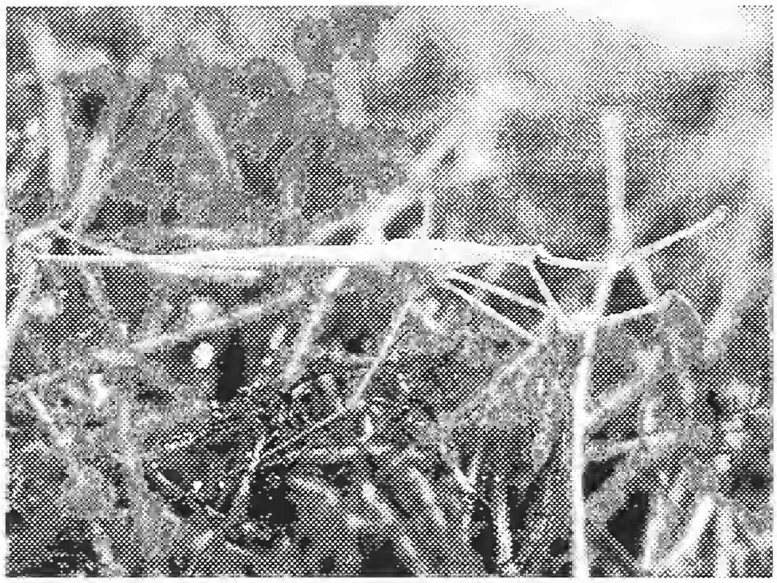
Following a conversation with Dr. Bill Brierly of the Environment Agency, a number of records from south Lincs, hitherto unknown to the LNU, were revealed from their database.

The Environment Agency's records are detailed here in full with their permission. If the Gibraltar Point record is accepted, this gives a total of 13 records from 9 sites. Any more records, new or old, would be most welcome.

Environment Agency data on water stick insect

31/07/85	TF260251	Vernatts Drain, Platts Bridge
22/10/90	TF219212	South Drove Drain
15/07/91	TF152185	River Glen, Tongue End
19/11/91	TF219212	South Drove Drain,
29/09/92	TF152185	River Glen, Tongue End
23/12/92	TF212220	Counter Drain, Pode Hole
21/06/93	TF260251	Vernatts Drain, Platts Bridge
20/06/94	TF126100	Greatford Cut, A16 Bridge
20/05/96	TF178498	Kyme Eau, South Kyme
11/09/96	TF151183	Thurlby Main Drain

Water stick insects spend all their life underwater although they are capable of flight and will occasionally fly on warm days to colonise new water-bodies. They are a southern species, being found mainly south of a line from the Severn to the Wash. We are very much on the northern limit of its range (Fitter & Manuel, 1991).


A water sick insect *Ranatra linearis* nymph photo Dave Bromwich

They are predators, feeding by stealth and lying in wait in well-vegetated, usually deep still water bodies, for any passing water creatures and are capable of taking small sticklebacks. Their long thin shape and fawn colouration gives them incredible camouflage amongst water plants. Sometimes they are known as the long-bodied water scorpion but it should not to be confused with the much more common and widespread water scorpion *Nepa cinerea*. This is a much darker coloured, broader insect, superficially resembling a dead leaf.

References

FITTER, R. & MANUEL, R. 1986. *Collins Field Guide to Freshwater Life.* Collins London.

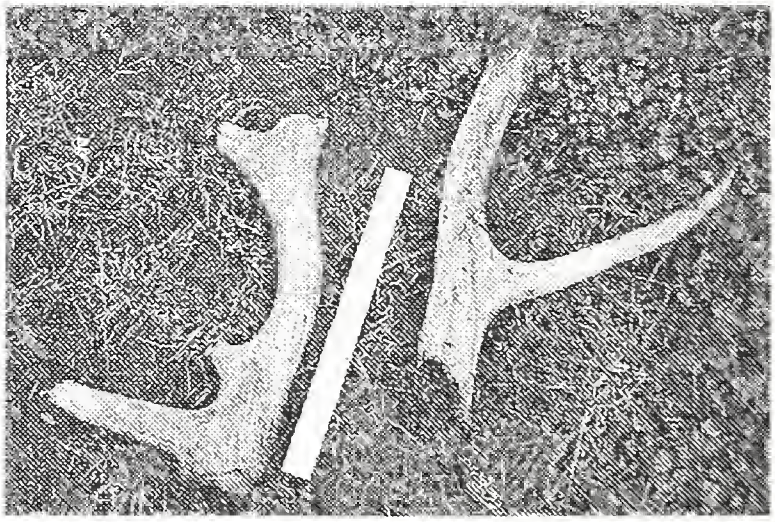
KIRBY, P. 1988. An annotated list of the Heteroptera of Lincolnshire and South Humberside. *Transactions of the Lincs Naturalists' Union.* **22**. 41-70

REMAINS OF AN ICE-AGE DEER FROM WASHINGBOROUGH

Jillian Binding

A stroll along Washingborough Drain bank (TF042710) in March 1996 led to the discovery of two pieces of a broken ancient antler. These pieces had been thrown onto the bank at the side of a peaty ploughed field, originally reclaimed fenland.

They were much larger than the equivalent parts the antlers of any species of deer still in existence. After consulting the British Museum fossil guide (BMNH, 1971) the antlers were shown to be those of a prehistoric deer of the genus *Megaceros* (literally - huge horns) often referred to as giant or Irish elk (although it was more closely related to the red deer than the elk or


The antlers from Washingborough photo J Binding
ruler = 30cm

moose). These deer ranged over the greater part of Europe and Asia during the Pleistocene which lasted from approximately 2 million years ago to 10,000 years ago, but may have survived in some areas until perhaps only 2-3,000 years ago. There were, however, many species within the genus *Megaceros* and also many regional variants making identification to the level of species very difficult.

Although such finds of antlers are not rare in Lincolnshire, most especially on the coast, these are fine specimens in that the "root" of the antler is present.

The pieces of antler were probably from a juvenile as an adult deer would have had an antler span of between 9 and 12 feet.

I am grateful to Adrian Harris in helping to identify them.

Reference BMNH (1971). British Caenozoic Fossils. British Museum. Natural History. London.

NATURAL AREAS and LINCOLNSHIRE

Graham Weaver

It has long been commonplace to speak of Britain as a very varied country, with many distinctive regions and localities. The Lake District and the New Forest are well known and different, as are Cotswold stone villages and the brick and tile ones of Sussex. Although this is usually thought of in landscape terms, similar ideas have also long been widespread in natural history publications. County Floras produced over the last century often divide their county into Botanical Divisions, based on the idea that there is some coherence to the flora within each division that is different from those surrounding. John Blackwood's Natural Regions map in Joan Gibbon's *Flora of Lincolnshire* (1975) is a good example of this. The concept of Natural Areas (or ecological zones) fits within these traditions.

England, although a small country, has diverse geology - topography, soils, bedrock - and climate. Until recently people largely had to work within the constraints of their local conditions. Communities frequently adapted to similar sets of conditions across the country in different ways, due to varying customs, land tenure, transport links, and human ingenuity. Pre-existing wildlife populations, which themselves varied across England, therefore had to adapt to a wide variety of land use practices across the country. This will have been compounded by varying changes in land management through time. The culmination of all this in the twentieth century is the many distinctive landscapes and assemblages of wildlife across England to which many people feel strong attachments.

One important consequence of the application of scientific technologies to agriculture, woodland management, buildings and transport over the past 200 years but rapidly speeding up over the past 50, has been the progressive reduction in the constraints of local conditions (soils, building materials and so on). This has led to increasing uniformity of land management and building practices, and a consequent reduction in local distinctiveness. This is reflected in both the look and content of the countryside resulting in, among other things, the now well-documented loss of much wildlife from traditional ranges. Many people have become disturbed by *so* many wildlife extinctions, and losses of highly valued local characteristics.

Sustainable development and biodiversity

There is a growing consensus among the public (voiced through voluntary organizations), and by government, that this loss of diversity across the countryside needs to be reversed and that this can only occur by incorporating wildlife and landscape objectives into a wide range of national economic and social activities. Protecting 'special sites' (some as nature reserves) is only a part of this, but of course a necessary element. This is the background to the rising tide of discussions and papers on Sustainable Development and Biodiversity. English Nature, in partnership with the Countryside Commission and English Heritage, and an increasing range of other countryside organisations, believe that future progress needs to be achieved in ways that are sensitive to local ecological and cultural histories. Wildlife policies need to concentrate resources on enhancing wildlife in appropriate places within traditional ranges. In this way, policies have the best chance of succeeding; some sense of continuity is maintained in local areas; and local people are more likely to associate with, and get involved in, activities flowing from these policies.

Natural Areas and Character Areas

English Nature's Natural Areas programme, initiated in 1993, is a major element of this approach that stresses local distinctiveness. English Nature is working to gain acceptance that Natural Areas will provide the agreed framework for wildlife policy, and practice, both nationally and locally. Central to the programme is that:

> it is comprehensive - everywhere in England, including the shore and coastal waters, is contained within a Natural Area
>
> there is consensus - the content and boundaries of the Natural Areas are agreed with a wide range of representative countryside organisations, as are wildlife objectives.

Distinctive landscapes and their wildlife can be identified at a number of different scales. Choosing an appropriate scale for Natural Areas was one of the difficult decisions to be made. Given that the Natural Areas programme at heart is about *action* for wildlife, and not just description, it was necessary to chose a scale, practical for targeting national schemes whilst reflecting local concerns and identity. Some compromise was necessary. One result of the need for a practical scale of area is that Natural Areas are not usually homogeneous. Areas would be too small and numerous if they were.

This need for compromise was increased after a decision by government that English Nature and the Countryside Commission should publish a Character Map of England depicting agreed 'Character Areas' in December 1996. Character Areas are defined using a wide range of geological, wildlife, land-use and settlement pattern information. The Department of the Environment is proposing that these Character Areas will become the accepted framework within which a wide range of countryside organisations, especially government ones, will deliver their policies. It was agreed that, in order to avoid confusion among decision makers at national and local level, each Natural Area must either equate with a Character Area or coincide with a group of Character Areas. Intensive discussions followed between English Nature and the Countryside Commission and with local countryside representatives to agree on these Character Areas. English Nature's draft Natural Areas were amended where necessary.

The depiction of discrete areas on a map (plate 11) raised the problem of boundaries. Many boundaries between Character Areas and Natural Areas are transitional, often kilometres broad. For simplicity the boundaries are shown as wide on the Joint Map. However, the accompanying descriptions take account of the fuzzy nature of many boundaries. Copies of the map and accompanying descriptions are available form English Nature's East Midland's office at The Maltings, Wharf Road, Grantham.

To define the distinctive wildlife of the Natural Areas, draft profiles of habitats and species for each Natural Area have been compiled by English Nature, using published sources and local specialist knowledge. These draft profiles highlight habitats of nature conservation significance, rare and recently extinct species and highly characteristic but less vulnerable ones. High priority will be given to refining and periodically reviewing these Profiles, as this information base becomes the bedrock for informing policy decisions.

Just to keep everyone on their toes, the government is also promoting the use of 'Local Biodiversity Action Plan Groups' (usually at county level and composed of representatives from a wide range of relevant organisations) as forums for the production of costed action plans for vulnerable habitats and species. Natural Area Profiles will give a necessary geographical framework for the targeting of such plans.

The Role of Natural History Societies - the LNU and Lincolnshire

Natural history societies, like the LNU, are essential in providing much of the information on which it is possible to base descriptions of characteristic groupings of species in particular areas; in providing local flavour on which species have local significance; and in undertaking much of the monitoring effort to measure the success (or otherwise!) of programmes for enhancing wildlife in Natural Areas.

Progress is already being made in Lincolnshire. Much information collected by LNU members has been incorporated in the Lincolnshire Trust for Nature Conservation's recently published *Nature in Lincolnshire: towards a biodiversity strategy.* Similar data have been incorporated in English Nature's draft Natural Area Profiles for Lincolnshire and discussions are advancing for the formation of a formal Biological Records Centre for the county, of which LNU will be a major partner. However, in the coming year, the LNU has an important role in refining these draft Profiles. In future years a significant role will be the sometimes urgent task of filling gaps in information highlighted by the Profiles.

Up-to-date biological data is becoming increasingly important in informing and influencing countryside and some urban policies. The LNU's remarkable database must remain up-to-date and become even more accessible than it already is. The enthusiasm of LNU's members, combined with the use of Recorder database makes this achievable.

Natural Areas in Lincolnshire

What happens to Lincolnshire when a Natural Areas approach is applied? Contrary to belief amongst those outside the county, Lincolnshire is a varied county with a strong, north to south grain of hills, valleys and plains, giving distinctive character to sections of the county moving from east to west. Post-war trends in farming have led to a dramatic increase in the similarity of farming across the whole county and a reduction in the number and size of wildlife-rich sites characteristic of particular areas, but the distinctiveness of different parts of the county has not been altogether lost.

At their simplest these parts consist of:

- the coastal fringe with its maritime habitats
- the coastal plain
- the chalk and sandstone hills of the Wolds
- the central clay vale
- the limestone ridge and plateau of the west
- the River Trent vale and associated low hills

This simple scheme needs refining to take account of:

- the fenland basin in the south east of the county
- the large, low lying basin of the head of The Humber
- various sandy drift deposits that cut across the north south topographical grain

of hills and vales (in particular the Coversands in the north, the Ancaster gap, and the fen edge sands and gravels towards the south east)

Furthermore, only some of these distinctive areas are wholly contained in Lincolnshire:

* the fenland basin includes parts of Norfolk and Cambridgeshire
* the limestone plateau spreads out of the county into Rutland
- the Trent vale includes areas in Nottinghamshire, Derbyshire and Leicestershire.

The agreed division of Lincolnshire into Natural Areas is summarised in the table (page 109) and the map (plate 13). This is amplified below. It will become clear that in Lincolnshire each Natural Area is not homogeneous, and that in a few cases a Natural Area is composed of two Character Areas.

Lincolnshire Maritime Natural Areas

These Areas include both marine and inshore waters, and terrestrial areas influenced by the sea (eg. sand dunes, saltmarsh, and some coastal grazing grasslands especially where brackish ditches are present). One purpose is to overcome the traditional, artificial, division often made by naturalists at the tide line. There is some inevitable overlap with terrestrial Natural Areas which are the main subject of this article. The maritime areas are derived from the 'coastal process cells' recognised by coastal geomorphologists : areas of inshore waters containing mostly closed systems of sediment movement. The Lincolnshire coast is part of two maritime Natural Areas: Bridlington to Skegness, and The Wash. Unfortunately the Humber Estuary is treated differently - see later.

The Bridlington to Skegness Maritime Natural Area

This is characterised by soft mobile sediments (sands, gravels, and some mud) on the sea bed and at the shore, with large quantities of suspended material in the sea water. Inshore waters are shallow and the sea bed sediments overlay bolder clay which, near the coast, may be fifteen to twenty metres thick. Tidal range is high (six metres at mean spring tides). In this comparatively hostile environment, species diversity is relatively low.

Survey data is sparse. Important for spawning sole and herring; a nursery area for a wider range of fish; supports brown shrimp, lobster, whelk and crab fisheries; there are records of allis shad. Offshore, there are significant winter numbers of divers and common scoters. Internationally important concentrations of some geese, ducks, and waders on some parts of the coast. There is an expanding breeding colony of grey seals.

The Wash Maritime Natural Area

The 'estuary' of the Steeping, Witham, Welland, Nene and Ouse rivers is also characterised by soft mobile sediments, but with a higher mud content than the open coast. Tidal range is even higher at 6.5 metres at mean spring tides.

More biological data is available. It is a spawning/nursery area for a wider range of fish than the open coast; supports cockle, mussel and pink and brown shrimp fisheries; contains 'reefs' of the worm *Sabellaria spinulosa*; hosts the largest number of wintering water birds in the UK and is one of the most important UK common seal breeding areas.

Humber Estuary Natural Area

(= Character Area) This approximately coincides with the area covered by the Humber Estuary Management Plan and has been included to recognise the functional unity of the whole estuary. Its landward boundaries are defined by the extent of remaining or land-claimed coastal marsh, or by the high flood banks which contain the estuary. However, artificial boundaries are created with adjacent Natural Areas.

Sediments in the Humber are even muddier than in the Wash and there is a high degree

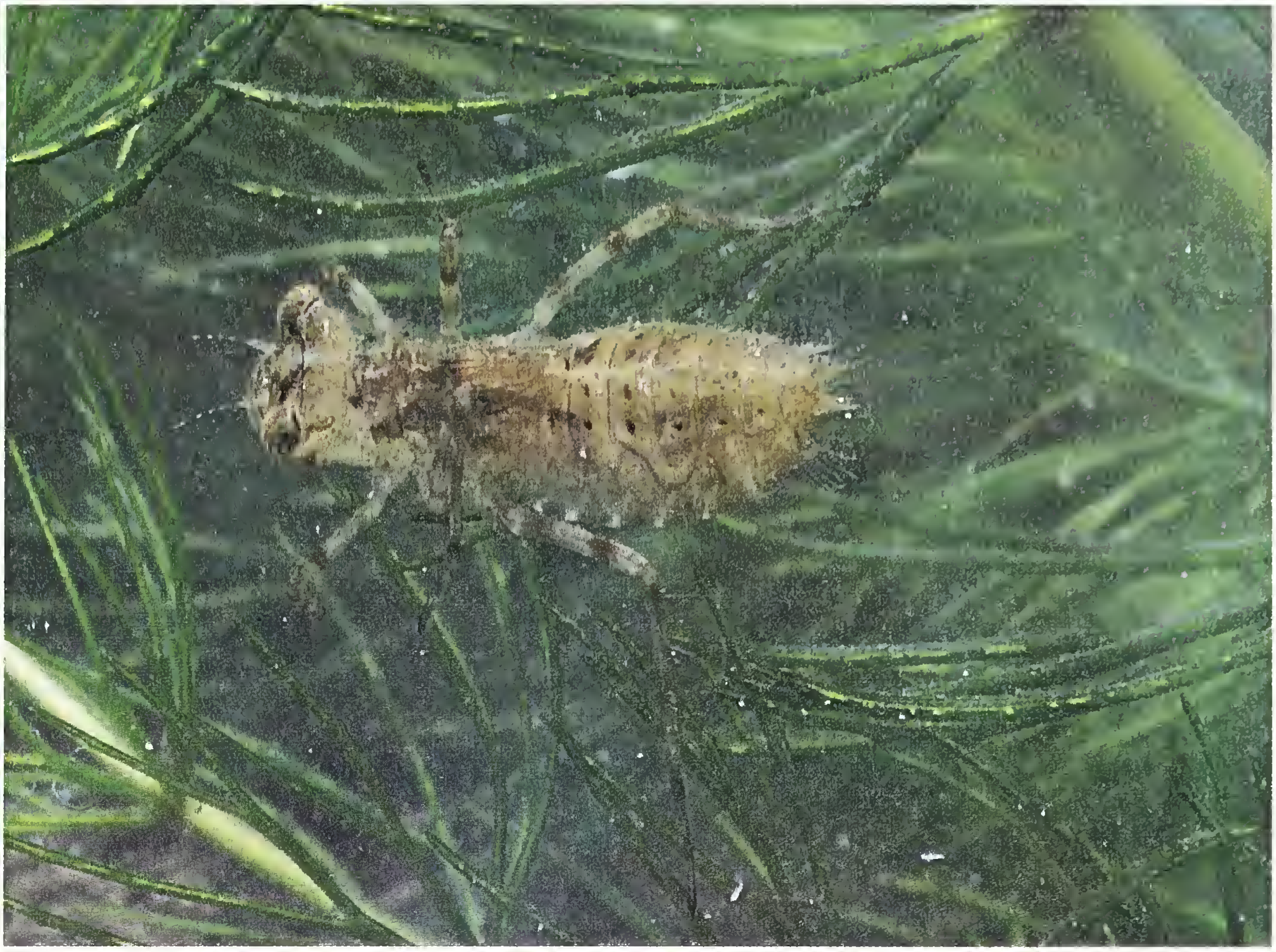


Plate 1 Like all of the Odonata, the **common darter** *Sympetrum striolatum* starts life as an aquatic, predatory nymph (page 71). photo M Harvey

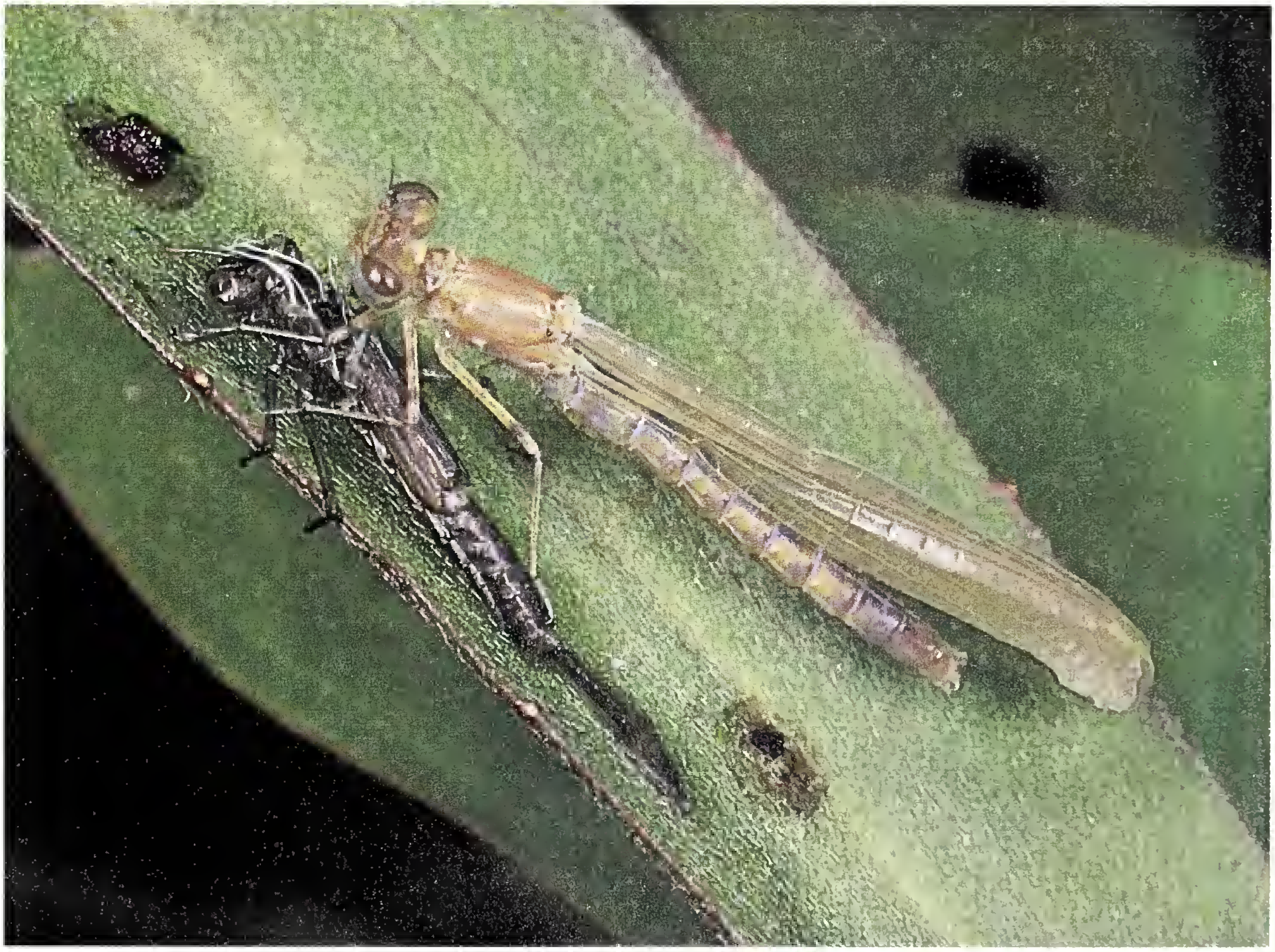


Plate 2 Emerging adult damselflies, like this **common damselfly** *Enallagma cyathigerum* are pale coloured tenerals (page 71). photo R S Key

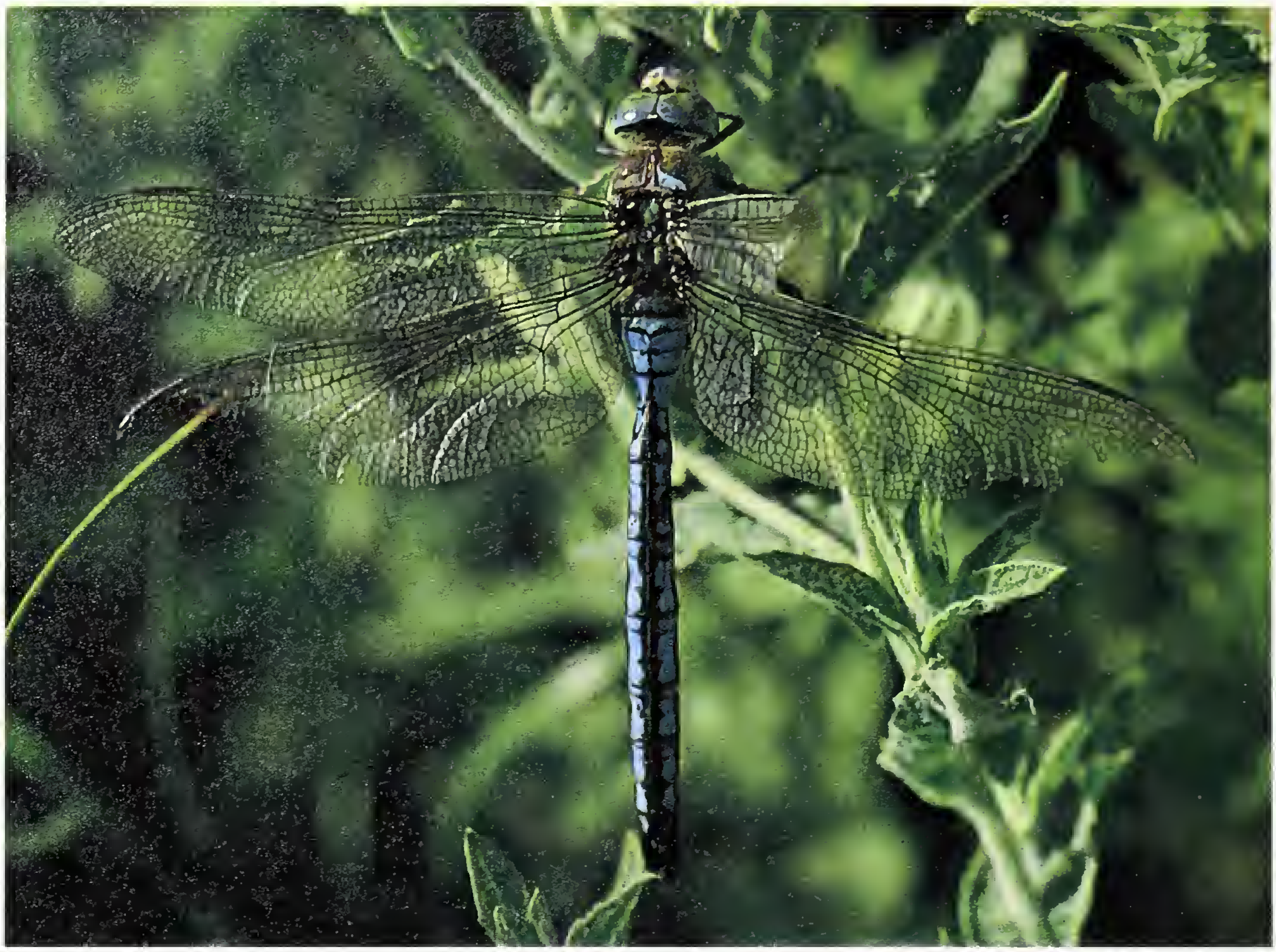


Plate 3 Dragonflies often become tatty as they age. This **emperor dragonfly** *Anax imperator* could still fly with half a forewing missing (page 74). photo E Blood

Plate 4 The **broad bodied chaser** *Libellula depressa* has become much more abundant in Lincolnshire since 1992 (page 75). photo H Schmalijohann

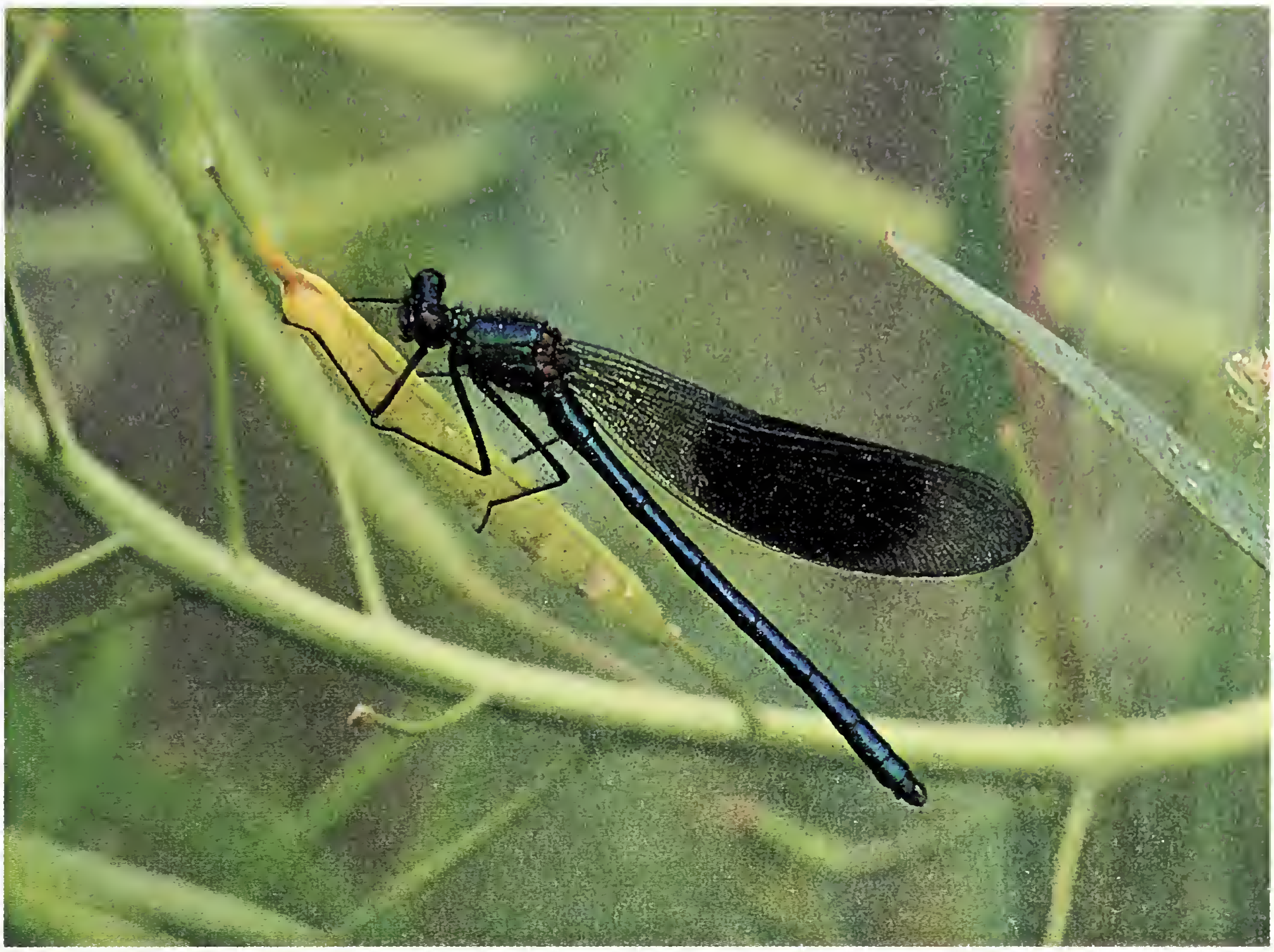


Plate 5 The unmistakable and very local **banded demoiselle** *Callopteyx splendens* is mainly a river species (page 77). photo M Harvey

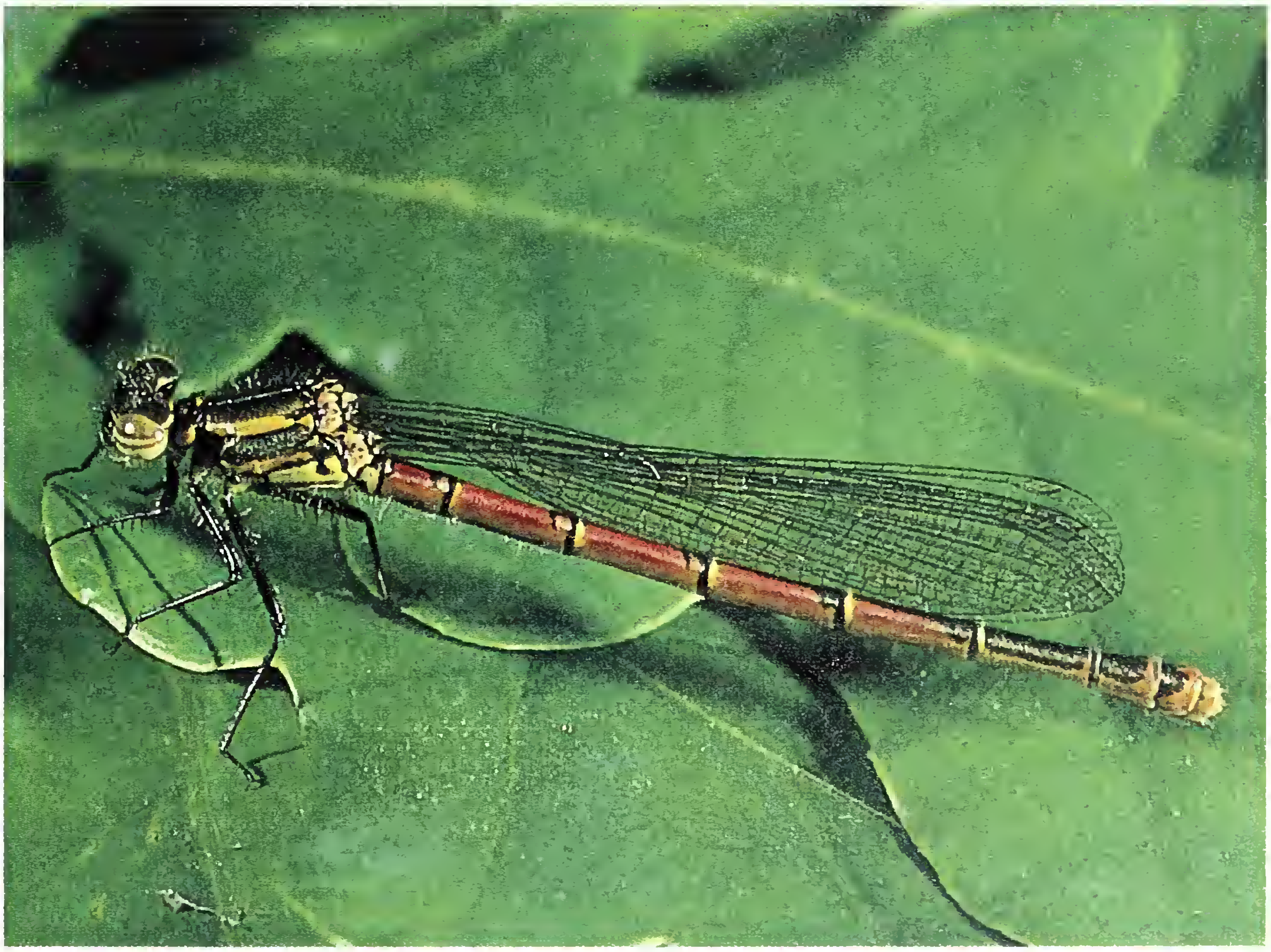


Plate 6 The **large red damselfly** *Pyrrhosoma nymphula* is one of our commonest species (page 78). photo Lincs Trust

Plate 7 Crowle Moors (page 80), home of the black darter, is the jewel in the crown of the Humberhead Levels Natural Area (page 110). photo G Trinder

Plate 8 Gibraltar Point (page 80), one of the best places to see migrant dragonflies, on the edge of the Lincs Coast & Marshes Natural Area (page 107). photo Lincs Trust

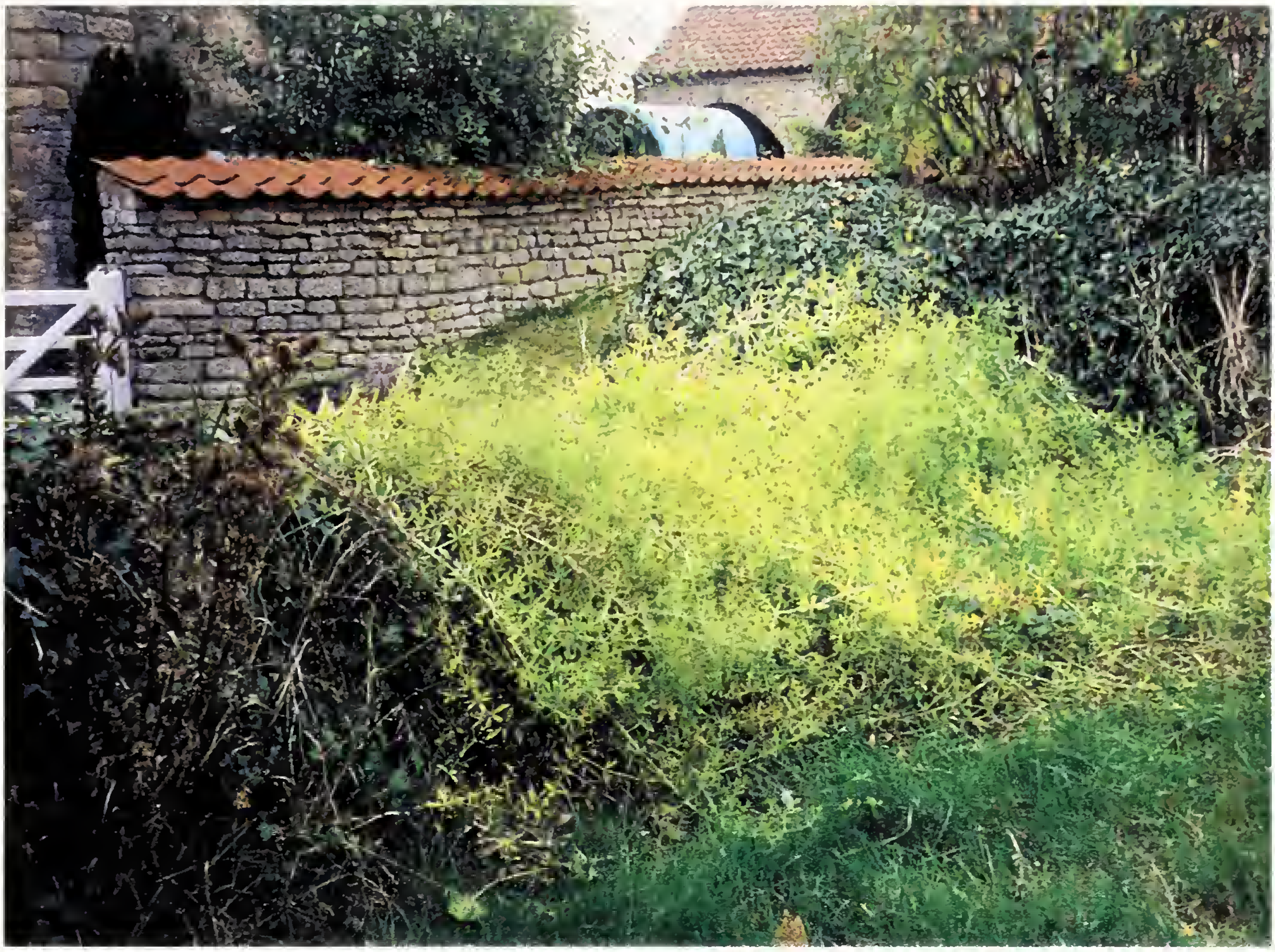


Plate 9 Common or dyer's madder *Rubia tinctorum* at Boothby Graffoe has escaped detection in Britain since before 1930 (page 87). photo I Weston

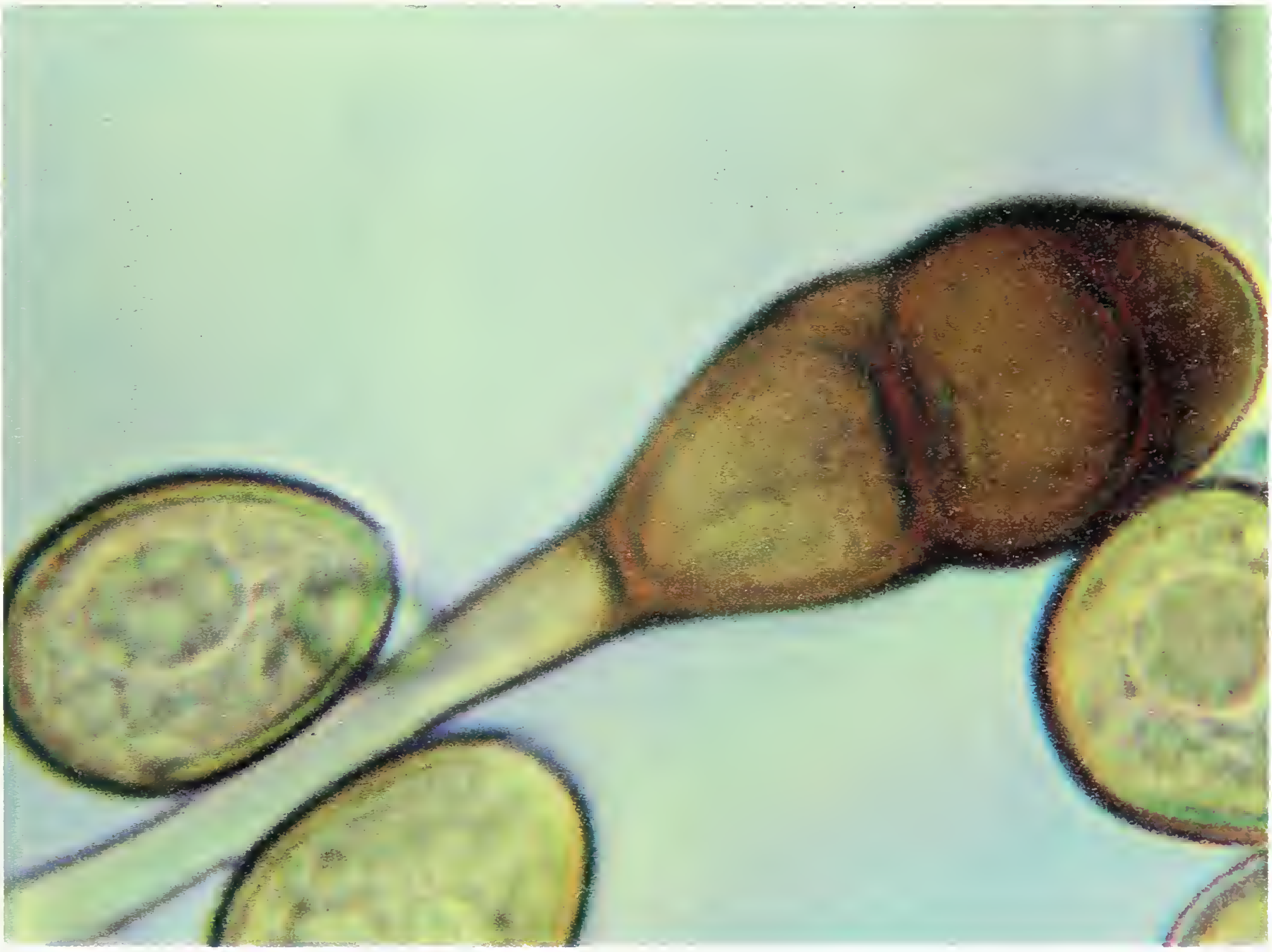


Plate 10 Spores of the rust *Puccinia polygoni-amphibii var convolvuli* new to Lincolnshire in 1996 from Lincoln (page 89 & 111). photo K Rowland

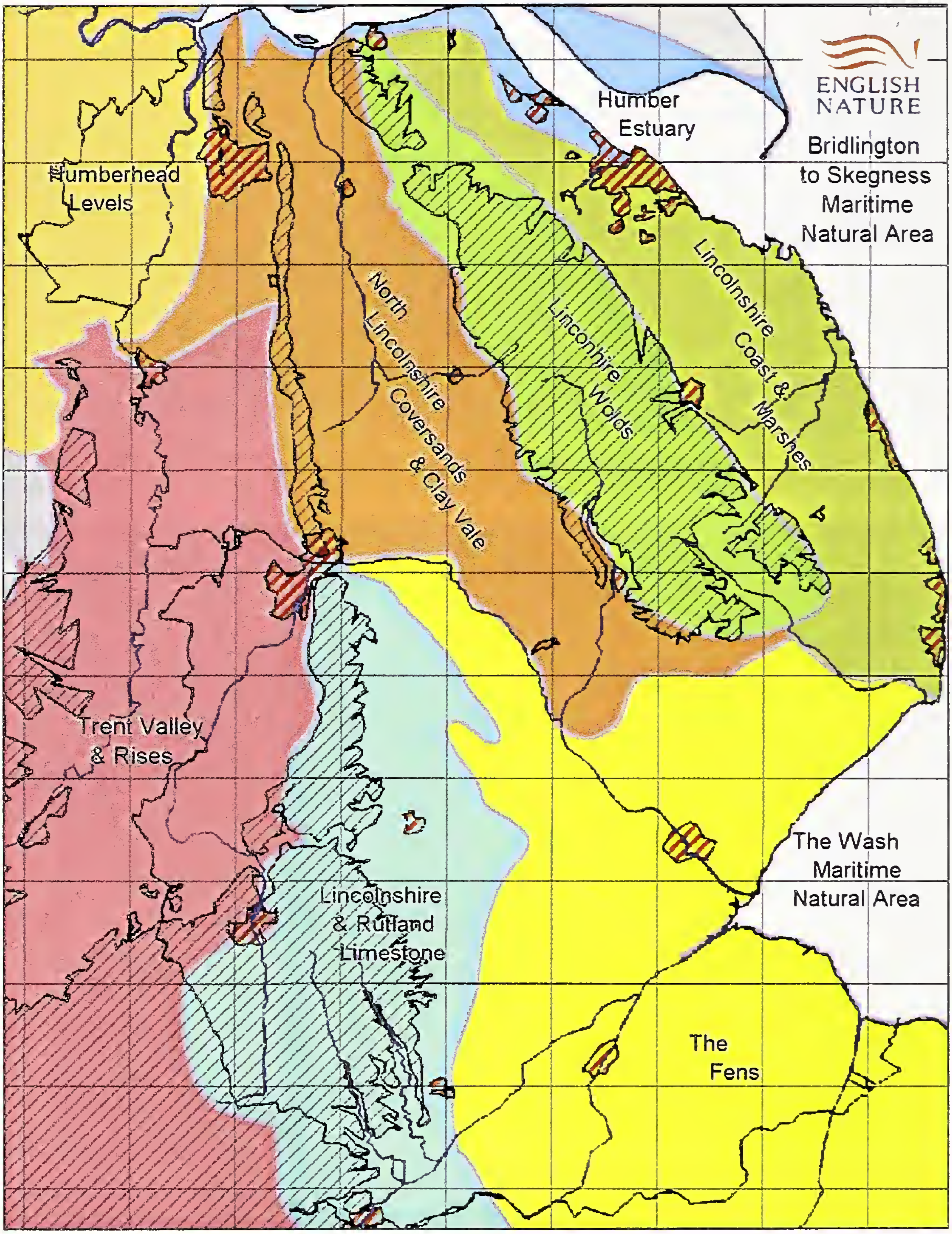

ENGLISH NATURE
Humber Estuary
Bridlington to Skegness Maritime Natural Area
Humberhead Levels
North Lincolnshire Coversands & Clay Vale
Linconhire Wolds
Lincolnshire Coast & Marshes
Trent Valley & Rises
Lincolnshire & Rutland Limestone
The Wash Maritime Natural Area
The Fens

Plate 11 English Nature's Natural Areas in Lincolnshire (page 95), in relation to drainage, land over 50m (diagonal black shading) and towns (diagonal red shading).

Plate 12 Calcerous flushed marshes are an important habitat of the Lincolnshire Wolds Natural Area (page108). Small flush at Elsham. photo R S Key

Plate 13 The small-leaved limewoods of the Coversands & Clay Vales Natural Area (page 108) are nationally important. Active coppice in College Wood. photo R S Key

Plate 14 The **native black poplar** *Populus nigra ssp betulifolia*, here in Fiskerton churchyard, is one of Britain's rarest trees (page113). photo I Weston

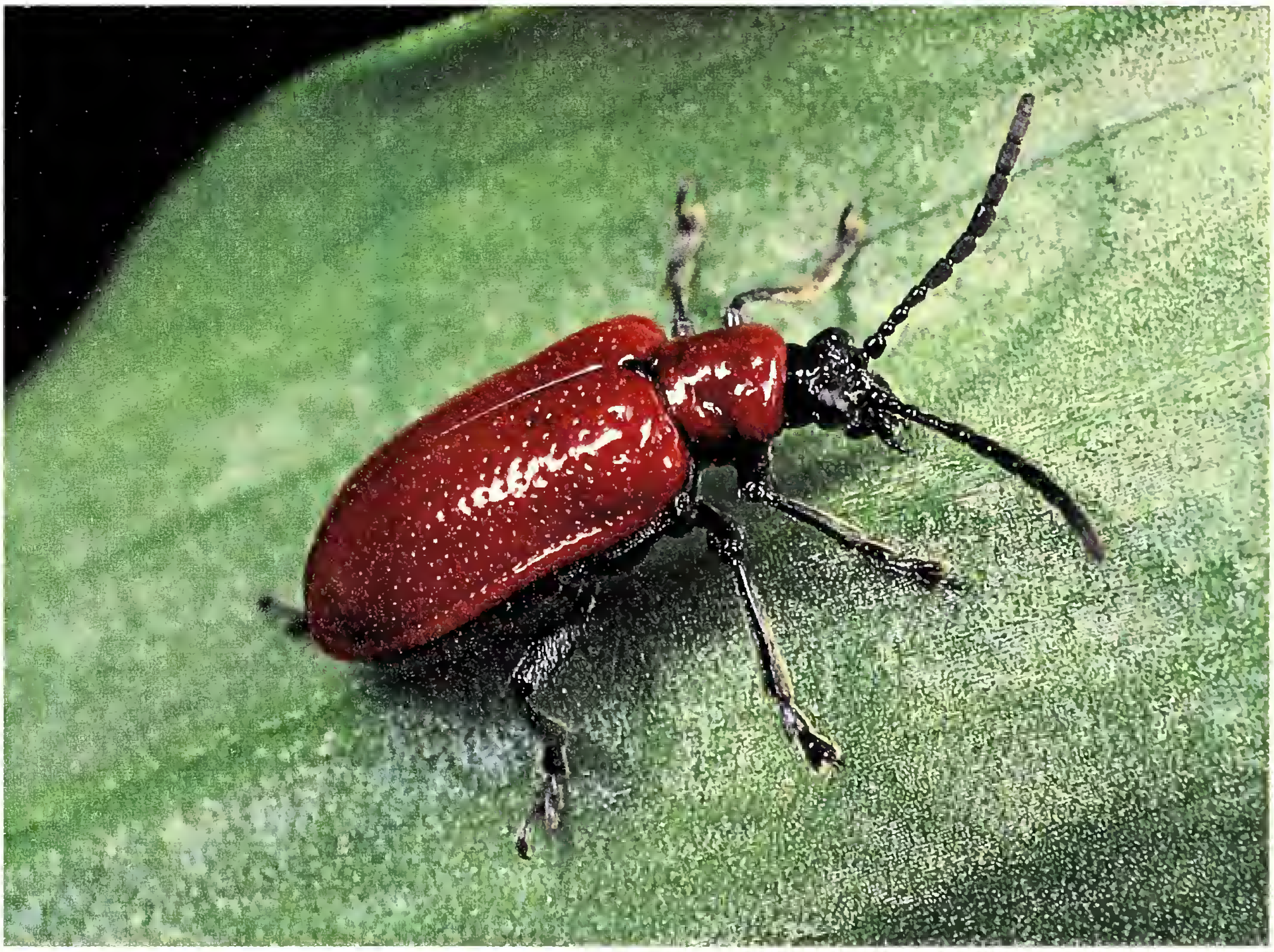


Plate 15 Although very attractive, the **lily beetle** *Liliocerus lilii*, apparently new to Lincolnshire in 1996, is unlikely to be made welcome by gardeners (page 125). photo R S Key

of tidal scour. The estuary is probably less important for commercial fish and shell fish than the two maritime Natural Areas but it is in the 'top five' UK estuaries for wintering water birds. A major feature on the south bank is the series of flooded clay pits, with a range of salinities, important for a wide range of fresh and brackish water organisms, including reed-bed specialists. Blow wells and saline lagoons are also important. Significant species include: hairy buttercup, bearded tit, purple-bordered gold moth, tentacled lagoon worm *Alkmaria romijni*.

The Lincolnshire Coast and Marshes Natural Area
(= Character Area) The wide, low lying coastal plain fringed in part by saltmarsh and sand dune. The western boundary is a transition area where boulder clay forms a dip slope of the Wolds. The southern boundary approximately follows the Steeping river, dividing the more ancient 'Marsh' landscape form the more recently created 'Fen' landscape.
Middle Marsh: A gently hummocky boulder clay area with an irregular settlement pattern. Ash-maple-oak ancient woodlands occur along the western margin, and occasional flower-rich neutral meadows and pastures survive. Ditches & engineered rivers dissect the area.
Outmarsh: An area of flat marine clay deposits, with occasional sand lenses (allowing blow wells to occur). Significant concentrations of permanent pasture (including ridge and furrow) occur near the coast. Many ditches and engineered rivers dissect the area.
Coastal fringe: Large areas of accreting saltmarsh and dune in the north and south, with hard sea defences in the middle area where the coastal system is highly erosive. Small, but very rich, fresh water marshes occur in some of the dunes (plate 8).
Significant species: marsh pea, little tern, wintering water birds, water shrew, natterjack toad, marsh moth, *Panagaeus crux-major* ground beetle, *Limonia ventralis* crane fly.

Lincolnshire Wolds Natural Area
(= Character Area) All the upland area in the east. Although often considered a chalk landscape, sandstone outcrops in places, glacial drift covers extensive areas of the chalk and sandstone, whilst streams and rivers have cut through to underlying clay. From near Market Rasen northwards, the western boundary is at the foot of the scarp, approximately where coversands begin. South of here the boundary is more a transition where the mixed soils of this part of the Wolds gently dip and grade into either heavy clays or in the extreme south and west sands and gravels.
Chalk uplands: Making up much of the north and centre, a relatively high and flat chalk plain often covered in drift, dissected by glacial valleys (some wet, some dry) in which most settlements occur. Fragments of chalk grassland survive. A number of streams rise here, sometimes with fringing marsh (plate 12). The northwestern scarp is a distinctive feature with extensive areas of mildly acidic grassland with wet flushes.
South-western ridges and valleys (the 'Spilsby Triangle'): An area of mixed geology, soils and topography, dominated by the valleys of the rivers Bain and Lymn. Sandstone replaces chalk at the surface of the hills and the landscape is more 'intimate'. A range of grassland types survive; alder carrs occur; and there are the rivers themselves.

Some significant species: early gentian, otter, river lamprey, white-clawed crayfish, beech-green carpet moth, *Platyparella discoidea* (a picture-winged fly).

North Lincolnshire Coversands and Clay Vale Natural Area
(= Central Lincolnshire Vale Character Area plus North Lincolnshire Edge with Coversands Character Area). Mostly the low-lying part of mid Lincolnshire between the limestone ridge to the west and the Wolds to the east. It is underlain by heavy clays, but these are covered in some areas by alluvium from the River Ancholme, or by sand and gravels. However, the Area also includes the narrow limestone ridge north of Lincoln and the tongue of coversands projecting westwards into the Trent valley towards Gainsborough. This (un-)Natural Area is rather an uncomfortable compromise. The western boundary

north of Lincoln is the foot of 'The Cliff', except where coversands extend west into the Trent valley. South of Lincoln the boundary follows the eastern edge of the River Witham's plain and then the catchwater drains at the Fen's northern margin.

Claylands: The bulk of the area, including the Ancholme valley, with poor natural drainage and still some mixed farming. Permanent pasture occurs with occasional flower-rich neutral meadows and pastures. The nationally important small-leaved lime dominated woodlands are also here (plate 13).

Coversands: Areas of blown sand masking underlying soils and features. Much of the County's remaining heathland survives on these areas, including significant inland dunes and fragments of wet heath.

South-eastern sands and gravels: An area covered by fen-edge and by glacial outwash (from the River Bain) sands and gravels. The rest of the County's heathland occurs here as do important alder-carr woods, and some deer parks. Flooded gravel pits are increasing the area of wetlands.

Limestone ridge: This ridge is narrow with an impressive west-facing scarp ('The Cliff'). Fragments of limestone grassland survive.

Some significant species: marsh gentian, woodlark, brown hairstreak butterfly, the triangle moth, *Leptura sexguttata* (a longhorn beetle), *Cryptocephalus coryli* (leaf beetle).

Lincolnshire and Rutland Limestone Natural Area

(= Southern Limestone Edge Character Area plus Kesteven Uplands Character Area) The upland areas in the south of the County underlain by limestone. The eastern boundary is the Car Dyke. The western boundary is the foot of the scarp slope ('The Cliff'). The southern boundary is the River Welland.

Lincoln Heath: A broad flat plateau with generally thin free draining soils. Intensive arable dominates, but grassland can still be found on the Cliff, and there is a small group of small-leaved lime woods on the fen edge. Occasional calcareous flushes and marshes on spring lines are also significant.

Kesteven plateau: The limestone plateau broadens and is overlain in part by clays and some sand. Mixed farming survives, including flower-rich limestone grassland and neutral meadow and pasture. Oak-ash-maple ancient woodlands are well represented, whilst wetlands occasionally occur along side the few streams and rivers. The County's only nationally important deer park occurs in this area.

Ancaster Gap: A small contrasting area of sands and gravels where the River Slea has cut through the limestone plateau. A few Breck-like grasslands survive, as does occasional neutral grassland.

Some significant species: man orchid, tree snail *Balea perversa*, Duke of Burgundy butterfly, scarce tissue moth.

Trent Valley and Rises Natural Area

(= Trent and Belvoir Vales Character Area plus others in adjacent counties). A large area around the lower reaches of the River Trent, spanning parts of Lincolnshire, Leicestershire and Nottinghamshire. It includes the flood plain of the River Trent and its main tributaries, along with adjacent clay and sand deposits, and some associated ranges of hills. The boundary with the Humberhead Levels is at the northern edge of the Gringley ridge (the Chesterfield canal), where carr lands and peatlands begin.

Lincolnshire 'Rises': An area of mixed topography and geology between the River Trent and the limestone ridge to the east. Some wet riverside grasslands can still be found, as can fragments of acid grassland. The area is dissected by ditches and engineered rivers, whilst sand and gravel extraction is increasing the area of wetland.

Some significant species: narrow-leaved water dropwort, curlew, mud snail *Lymnaea glabra*, red-eyed damselfly.

Humberhead Levels Natural Area

(=Character Area). The large open and flat plain at the head of the Humber Estuary. The

Semi-natural habitats in Natural Areas in Lincolnshire ✔ Major characteristics ✓ Minor characteristics ✔[1] (Includes brackish ditches)	Woodland			Dry grass/heath			Wetland						Coastal				
	Ancient Woodland	Wet woodland/alder carr	Parkland	Calcareous grassland	Neutral Grassland	Acid grass & heathland	Peatland	Wet heathland	Wet grassland	Marsh & fen	Open water	Rivers streams & ditches	Sand dunes	Brackish lagoons	Saltmarsh	Mud & sandflats	Open sea and estuary
Lincolnshire Maritime areas													✔	✓	✔	✔	✔
Humber Estuary					✓				✓	✔	✔	✓	✓	✓	✔	✔	✔
Lincolnshire Coast & Marshes	✔				✔				✓	✓	✓	✔[1]	✔	✔			
Lincolnshire Wolds	✓	✔		✔	✓	✓			✓	✓		✔					
North Lincs Coversands & Clay Vale	✔	✓	✓		✔	✔		✓			✓	✓					
Lincolnshire & Rutland Limestone	✔		✔	✔		✓						✓					
Trent Valley & Rises	✓				✔	✓			✓		✓	✔					
Humberhead Levels					✓		✔					✔					
The Fens									✓	✓	✓	✔[1]					

Lincolnshire part equates with the Isle of Axholme.
Isle of Axholme: This area is almost totally in intensive arable cropping, intersected with many drains and engineered rivers. Remarkably, occasional flower-rich grasslands have escaped intensification, whilst part of the nationally important Thorne-Crowle peatland complex is located in the Isle (plate 7).
Some significant species: Bog rosemary, nightjar, large heath butterfly, *Bembidion humerale* (ground beetle), *Curimopsis nigrita* (mire pill beetle).

The Fens Natural Area

(= Character Area). The lower flood plain of the rivers Witham, Welland, Nene and Ouse. A mixture of silt and peat soils, now all intensively drained following land-claim, mostly since the 1300s. Areas of older settlement occur on silt and clay ridges and islands. This area excludes distinctive fen-edge sands and gravels, which are included in adjacent Areas. The seaward boundary is the most recent sea defence bank, so excluding the extensive saltmarshes (unlike the Lincolnshire Coast and Marshes Natural Area).

The silts and peats: Most almost totally in intensive arable farming, intersected with many drain and engineered rivers. Good wetland habitats in and adjacent to some of the drains and rivers. Important brackish drains and pools to the landward of sea walls.

The Townlands: Small areas of higher elevation and older settlement, still with traces of mixed farming (including permanent pasture) and a more 'intimate' landscape.

Some significant species: ribbon-leaved water plantain, marsh harrier, Witham orb mussel *Sphaerium solidum*, *Hydrochus elongatus* (a water beetle).

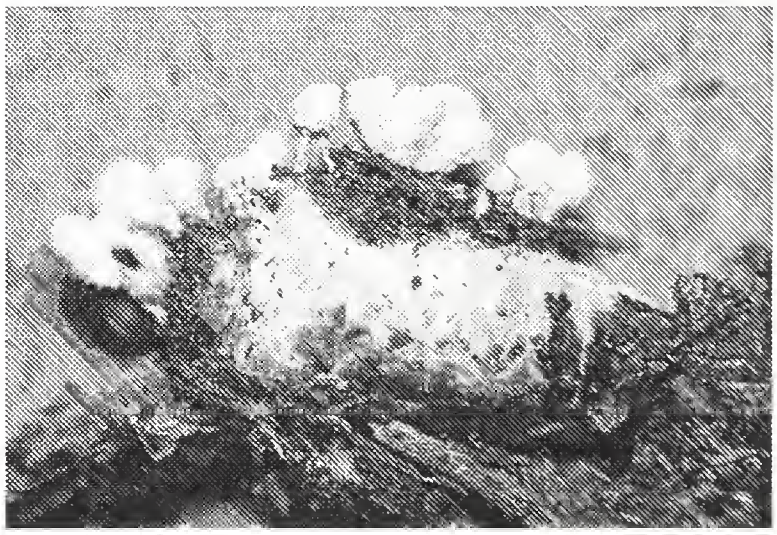
Graham Weaver is Parish Environmental Survey Officer with the Community Council of Lincolnshire and was formerly with English Nature leading on Natural Areas in the E. Mids.

LINCOLNSHIRE NATURAL HISTORY IN 1996

Winters at both ends of the year were overall mild, although there was a very severe cold snap early in the new year. 1996 was, however, a year dominated by drought and heat, the record-breaking drought from the previous two years. The warm weather started with a very early spring and continued into a very long, very hot and dry summer and autumn. While this may have made life difficult for some wetland species (and some naturalists!) some groups of organisms had a bumper year, especially some of the insect groups where there were spectacular migrations and new species recorded.

FUNGI - Ken Rowland

At the meeting on 20th April at Old Wood, Skellingthorpe, fungi were not very inspiring, although 32 species were recorded. One of the more unusual specimens was of *Paecilomyces farinosa* on a moth pupa. The rest were all rather mundane, although two examples of *Strobilurus tenecella* growing on buried conifer cones turned up. This was not a bad collection for so early in the season,



Paecilomyces farinosa on a pupa photo K Rowland particularly considering how dry the weather had been with only about 5mm of rain in the last month. One new county record from this meeting was of the fungus *Polycephalomyces tomentosus* growing on an old specimen of the myxomycete *Trichia varia*. It has been confirmed by Kew.

The meeting at Burwell and Haugham Woods on the 19th of May was at the same site as last year's foray. In spite of the very dry conditions through the spring, over forty species were noted although some of them were rather obscure and difficult to see with the naked eye, such as *Lachnellula occidentalis* on conifer twigs.

In late June Pat Delap found the truffle *Hydnotrya michaelis* from Laughton Forest, which was confirmed by Kew, another new county record.

At Beckingham Ranges it was very hot and dry but eighteen species were recorded, not bad for August, although there was nothing of great interest. Later in August I found in my garden in Skellingthorpe goose grass with a powdery mildew on it *Erisyphe galii*, another new county record, although I am sure that it must be around but overlooked.

In late August we visited a farm in Skellingthorpe and found in the garden a rust on what I thought was field bindweed, which would make it *Puccinia convolvuli*, of which there has only been one British record, sometime before 1889. I sent it down to Kew whence, by return, I got my wrist slapped by Brian Spooner as it wasn't on field bindweed but on black bindweed, a quite unrelated plant, and the rust was *Puccinia polygoni-amphibii* var *convolvuli* (plate 10), still rather rare and a new county record. A few months later another specimen of the same fungus was sent to me by Colin Faulkner from the Spalding area.

At Far Ings on 14th September it was still very dry. However, 19 species were recorded although only 4 of these were agarics, the remainder being rusts and powdery mildews. The annual foray was at Elsea and Math Wood. It rained very hard all afternoon and only around 70 species were recorded, although 60 of them were new records for the wood.

The earth star *Geastrum triplex* was found at Gibralter Point in November. Five species of earth star have been recorded at this site. A specimen of another earth star *Geastrum striatum* arrived from Mr & Mrs Davey in Scunthorpe via the museum there and thence from Mark Crick at the Trust. This had taken three and a half months on its travels! Whilst not a rare species, it is uncommon and probably overlooked and we have now eight records for the county, going back to 1903. A report appeared in the Daily Telegraph in September of the rediscovery of the earth star *Geastrum berkleyi,* near Malvern, saying it was thought to be extinct and hadn't been seen tor seventy years. However, we have a record of it from Hubbards Hills at Louth in 1952, identified by Grace Waterhouse and authenticated by Kew, one of only total of 10 records in the whole of Britain. It may be worth looking for it again in that area in the autumn.

Sending in records and specimens - Please don't post specimens on Fridays - they tend to get messy by the time they arrive on Monday! Please keep the data accurate. Note the substrate or host and the Ordnance Survey grid with the name of the site and the nearest place with a name shown on the map. For something difficult or unusual, please send a specimen, dried if possible. Not only may we have new county or even British records, we may also come across new host associations and vouchers may have to be sent to Kew.

Acknowledgements My thanks to all the members who have sent specimens or lists, in particular the Mr & Ms A Binding, K Bradshaw, T Brunning, G Clayton, A & C Faulkner, K Heath, J Ostler, P Porter, K Robertson and I Weston. Also to Dr Brian Spooner at Kew for help with difficult species, and also to Dr Jack Marriott for advice and support.

MOSSES, LIVERWORTS AND LICHENS - Mark R.D. Seaward

1996 was a remarkable year for lichenological recording in Lincolnshire, due almost entirely to the British Lichen Society's churchyard survey: not only was I able to visit over 30 churchyards, but I was joined by a specialist BLS group in July for a detailed survey in the south-east. In addition, several other BLS members independently visited further churches. As a consequence of this, 19 new county, 23 new vice-county, 249 divisional and 992 grid square records have been added to our registers. In addition, *Ramalina pollinaria*, not seen for more than a century in the county, has been recorded.

Although the number of bryophyte records for the county has been less dramatic, 2 new county, 1 new vice-county, 13 divisional and 78 grid square records have been made, the latter mainly as a result of Tim Smith visiting 3 squares in the south-east of the county from which no species had previously been recorded (cf. Seaward, 1996 , fig.1).

Liverworts and Mosses

Records have been contributed by Mr P.Kirby (PK), Mr F.R.Lammiman (FRL), Mrs C Rieser (CR) and Mr T.Smith (TS). **NCR** = new county: **VCR** = new vice-county record.

Liverworts

Cephalozia connivens (Dicks.) Lindb. 1 (Crowle Waste, 6/1996, PK; there is a record (det.H.H.Knight) by G.H.Allison from 'Isle of Axholme' dated 1939, the last time it was seen in the county, herbarium material for which has not been located).
Frullania dilatata(L.)Dum. 6 (FRL)

Mosses

Amblystegium tenax (Hedw.)C.Jens. 11 (Claxby Spring, 5/1996 CR; **NCR**, since the record by W.W.Mason and S.Gasking from Cadney in 1898 is not supported by herbarium material).
Barbula cylindrica (Tayl.)Schimp. 12 TS
B.recurvirostra (Hedw.)Dix. 11 FRL & CR
Fissidens taxifolius Hedw. 12 TS
Orthotrichum lyellii Hook.& Tayl. 6 FRL
O.pulchellum Brunton 8 FRL
Plagiomnium rostratum (Schrad.)Kop. 12 TS
Rhynchostegium confertum (Dicks.)Br.Eur. 12 TS
Sphagnum squarrosum Crome 1 PK
Thamnobryum alopecurum (Hedw.)Nieuwl. 2 FRL
Trichstomum crispulum Bruch 11 Claxby Mill Hill Quarry, 5/1996 CR; **VCR**
Ulota crispa (Hedw.)Brid. 6 (Burton Pit, 6/1996 FRL; first record for the county since 1913)
Zygodon conoideus (Dicks.)Hook.& Tayl. 8 Haugham Wood, 5/1996 FRL; **NCR**

Lichens

The following records have been contributed by I Blatchley, T Chester, C Hitch, K Palmer, I Pedley, K Redshaw, K Sandell, D Smith and the recorder (MRDS).

Acarospora rufescens (Ach.)Krempelh. 2 NCR 3 6 7 9 10 13 16 17 **VCR** 18
A.smaragdula (Wahlenb.)Körber (as *forma lesdainii*) 11 12 14
Agonimia tristicula (Nyl.)Zahlbr. 10
Arthonia lapidicola (Taylor)Branth.& Rostrup 11 **VCR** 17, 18 **NCR**
Aspicilia caesiocinerea (Nyl.ex Malbr.)Arnold 17 **NCR**
A.calcarea (L.)Mudd 12
A.contorta (Hoffm.)Krempelh. 12 16 17
A.subcircinata (Nyl.)Coppins 12 13 16 17 **VCR**
Bacidia sabuletorum (Schreber)Lettau 8 12 14 17
Belonia nidarosiensis (Kindt)P.M.Jorg.& Vezda 12 **NCR** 17 **VCR**
Buellia aethalea (Ach.)Th.Fr. 2 **NCR**, 6 10 11 12 13 14 **VCR** 16 17, 18
B.punctata (Hoffm.)Massal. 12
Caloplaca crenularia (With.)Laundon 12
C.dalmatica (Massal.)H.Olivier 12 **NCR**
C.decipiens (Arnold)Blomb.& Forss. 12
C.isidiigera Vezda 6 10 12 13 14 18
C.lactea (Massal.)Zahlbr. 11
C.ruderum (Malbr.)Laundon 14 **NCR**
C.variabilis (Pers.)Müll.Arg. 14 17
Catillaria chalybeia (Borrer)Massal. 11 14
C.lenticularis (Ach.)Th.Fr. 9 10 11 12 13 14 15 17 18
Cladonia chlorophaea (Flörke ex Sommerf.) Sprengel 14 18
C.fimbriata (L.)Fr. 17
C.ochrochlora Flörke 8
Cliostomum griffithii (Sm.)Coppins 12 13 18
Collema auriforme (With.)Coppins & Laundon 3
C.fuscovirens (With.)Laundon 3 **NCR** 9 12
Cyphelium inquinans (Sm.)Trevisan 10 **VCR**
Diplotomma alboatrum (Hoffm.)Flotow 12 17
Evernia prunastri (L.)Ach. 3

Haematomma ochroleucum var. *porphyrium* (Pers.)Laundon 15
Hyperphyscia adglutinata (Flörke)Mayrh Poelt 10
Hypocenomyce scalaris (Ach.ex Lilj.)Choisy 13 18
Hypogymnia physodes (L.)Nyl. 18
Lecania erysibe (Ach.)Mudd 12 17
L.turicensis (Hepp)Müll.Arg. 10 **VCR** 11 12 14 17
Lecanora chlarotera Nyl. 18
L.conferta (Duby ex Fr.)Grognot 3 6 10 11 12 13 14 **VCR** 15, 16 17, 18
L.crenulata Hook. 17
L.expallens Ach. 12
L.orosthea (Ach.)Ach. 12 15, 17
L.polytropa (Hoffm.)Rabenh. 12
L.pruinosa Chaub. 18 **NCR**
L.sulphurea (Hoffm.)Ach. 12 17
Lecidea fuscoatra (L.)Ach. 12 16 17
Lecidella carpathica Körber 10 **NCR**
L.scabra (Taylor)Hertel & Leuckert 18
Lepraria lobificans Nyl. 3 8 13
Leproloma vouauxii (Hue)Laundon 17
Leproplaca chrysodeta (Vainio ex Räsänen) Laundon 10 12 15, 17
Micarea erratica (Körber)Hertel, Rambold & Pietschm. 10
Opegrapha atra Pers. 18 **VCR**
O.gyrocarpa Flotow 18 **NCR**
O.niveoatra (Borrer)Laundon 18 **NCR**
O.rupestris Pers. (on *Verrucaria baldensis*) 10 **NCR** *O.saxatilis* auct. 3 12 17, 18 **VCR**
Parmelia glabratula ssp. *fuliginosa* (Fr.ex Duby) Laundon 12 17
P.mougeotii Schaerer ex Dietr. 11 12 16 **VCR**, 18
P.revoluta Flörke 16
P.subaurifera Nyl. 3 18
P.subrudecta Nyl. 12 18
P.verruculifera Nyl. 10 **NCR**, 12 13 16 **VCR**
Pertusaria amara (Ach.)Nyl. 17
Phaeophyscia nigricans (Flörke)Moberg 3 16 17 18
Phlyctis argena (Sprengel)Flotow 12 18
Physcia dubia (Hoffm.)Lettau 10 12 17
P.tenella (Scop.)DC. 12
Physconia enteroxantha (Nyl.)Poelt 18 **VCR**
Placynthiella icmalea (Ach.)Coppins & James 12
Polysporina simplex (Davies)Vezda 11 **VCR**, 14 **NCR** 17
Porpidia crustulata (Ach.)Hertel & Knoph 10
P.soredizodes (Lamy ex Nyl.)Laundon 2 **NCR** 3 6 10 11 12 13 14 **VCR** 16 17, 18
Protoblastenia rupestris (Scop.)Steiner 12
Psilolechia leprosa Coppins & Purvis 10 13 14 **VCR** 17, 18
Ramalina canariensis Steiner 12 18 **VCR**
R.farinacea (L.)Ach. 18
R.pollinaria (Westr.)Ach. 11 - first Lincs. record for more than 100 years
Rhizocarpon obscuratum (Ach.)Massal. 12 16 17
Rinodina calcarea (Arnold)Arnold 10 **VCR** 12 14 17 18
R.gennarii Bagl. 12
R.teichophila (Nyl.)Arnold 9 10 11 12 14 17, 18
Sarcogyne regularis Körber 12 13
Sarcopyrenia gibba (Nyl.)Nyl. 9 10 **VCR** 13 17
Schismatomma decolorans (Turner & Borrer ex Sm.)Clauz.& Vezda 18
Scoliciosporum umbrinum (Ach.)Arnold 12 14 17
Solenopsora candicans (Dickson)Steiner 17
Stereocaulon nanodes Tuck. 12 **NCR**
S.pileatum Ach. 13 **VCR**
Tephromela atra (Huds.)Hafellner & Kalb 12
Thelidium papulare (Fr.)Arnold 17 **NCR**
Trapelia coarctata (Sm.)M.Choisy 12 16 18
T.obtegens (Th.Fr.)Hertel 14 **VCR**
T.placodioides Coppins & James 10 12 14 17 18
Trapeliopsis flexuosa (Fr.)Coppins & James 10 **VCR**
Usnea subfloridana Stirton 16
Verrucaria baldensis Massal. 11 12
V.glaucina auct. 12 17
V.hochstetteri Fr. 17
V.macrostoma Dufour ex DC. 9 10 **VCR** 11 14 **NCR** 17 18
V.macrostoma forma furfuracea B.de Lesd. 12 13 14 15 17
V.viridula (Schrader)Ach. 8
Xanthoria polycarpa (Hoffm.)Th.Fr. ex Rieber 13

Reference SEAWARD, M.R.D. 1996. Lincolnshire Natural History in 1995. Mosses, Liverworts and Lichens. The Lincolnshire Naturalist. **24** 27-30.

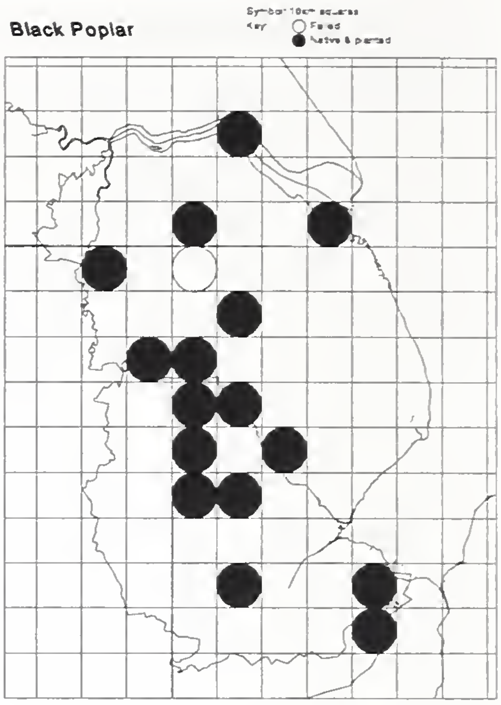
BOTANICAL NOTES - Irene Weston

National Mistletoe Survey - Update

Last year's article (Weston, 1996) prompted records from six 10km squares, including SK90 from which it had not previously been recorded.

National Survey of Native Black Poplar

The Daily Telegraph 'Black Poplar Hunt' stimulated a search for the native tree in Britain. This is not the commonly planted hybrid but our native *Populus nigra* ssp. *betulifolia* (plate 14). This is one of Britain's rarest trees, identified by the 'bossing' of the bark, the absence of glands near the junction of the leaf lamina and petiole and in the first instance by size and general 'jizz', which has to be verified. The survey was initiated nationally by Edgar Milne-Redhead, and in Lincolnshire by forester John Ockerden, Anne Goodall and myself and the present maps are from checks by the writer and P.Kirby. There are still confirmations to do in 1997.



The Atlas 2000 Project

Atlas 2000 is the current recording scheme for ferns and flowering plants in Great Britain organized by the Botanical Society of the British Isles It is now well under way following its launch in April 1996. Records are being collected for each 10km square (hectad) until November 1998 and the new plant atlas will be published in the year 2000.

Ninety-five hectads (10 km squares) have at least some land in Lincolnshire, although four of them have less than ½km^2 of Lincolnshire land. I would very much welcome L.N.U. members who would be prepared to help by sending in plant records. I can supply recording cards, based on Stace's Flora of Great Britain. The method used by most recorders for a new hectad is to pick out the most potentially species-rich area of habitat within it and make a list for it, then moving to other areas of habitat, making a new list for each site. Sites or areas of habitat can be chosen to cover a range of tetrads within the hectad to enable a higher resolution of mapping. By covering the most diverse habitats, a master list for the hectad soon grows. Under-recorded hectads in Lincolnshire include; SK79 SK82 SK83 SK84 SE70 SE71 SE93 TF05 TF16 TF19 TF24 TF27 TF28 TF38 TF48 TF55 TF56 TF57 TA00 TA01 TA02 TA10 TA11 TA12 TA20 TA21

Arable Weeds

Mrs Claire Harrison has recorded both the fluellens *Kickxia spuria* and *K. elatine*, together with corn gromwell *Lithospermum arvensis* in a beet crop near Horncastle. In 1995 Frank Lammiman discovered a population of shepherd's needle *Scandix pecten-veneris* in a cereal crop at Covenham St. Mary (TF39). About 200 plants were also counted in 1996. Shepherd's needle is one of the nationally scarce plants in Great Britain and a population of this size is very noteworthy. Mr Lammiman and the farming owner are monitoring the population with a view to its conservation. A population of cornflower *Centaurea cyanus* found in 1995 at Horncastle in oil-seed rape was not seen in 1996. Mr and Mrs A.E. Smith reported a large colony of corn cockle *Agrostemma githago* seedlings from Claxby near Alford and Mr W.M. Peet saw a single plant of this species growing among vegetables in Stickney (TF35). Venus' looking-glass *Legousia hybrida* has been recorded in a number of squares in 1996.

Fruits of shepherd's needle *Scandix pecten-veneris* photo I Weston

Historical Pillwort Mystery

As a result of the Scarce Plants Survey, I have had communication with Mr Michael Foley of Blackburn who is writing an account of pillwort *Pilularia globulifera* in Britain. He has found a specimen in the herbarium at Eccles Museum labelled 'The Holmes, North Lincs' and in the collection of Dr. B. Carrington (1827-1893) of Lincoln, who died in Eccles. Mr. Foley wondered whether 'The Holmes' was the locality we now know by that name in TF49. If so, it would be a new locality and as the existing first record for Lincolnshire is from VC 54 in 1910, also a new first county record. In the Flora of Lincolnshire (Gibbons, 1975) we read 'Dr B. Carrington M.D. of Lincoln might have left us more records but his herbarium has perished and only his paper on plants near Lincoln (1849) has survived'.

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DRAGONFLIES AND DAMSELFLIES - John Redshaw

1996 was a good year for dragonfly range expansion and for the amount of recording undertaken which produced a host of new 10 km square records. Many new records were due to recorders working in areas with a lack of observations or the absence of particular species which had been highlighted in the map up-dates supplied to contributors.

The current recording scheme runs as a tripartite group formed by interested members of the British Dragonfly Society, the L.N.U. and the County Trust. As group leader for the BDS, and with the help of David Bromwich, a B.D.S. field meeting was held at Whisby Nature Park and Reserve on 13 July after being advertised in the B.D.S. Newsletter. Although poorly attended, those present had an enjoyable day and recorded nine species plus a possible hairy hawker *Brachytron pratense*. Of particular interest were the large numbers (500+) of common blue damselfly *Enallagma cyathigerum* including mating pairs, and 25 black-tailed skimmers *Orthetrum cancellatum*.

Black-tailed skimmers and red-eyed damselflies *Erythromma najas* had a very good season with expansions in range, and banded demoiselles *Calopteryx splendens* were found in new areas, including two records from Humberside. After the invasion of 1995, yellow-winged darter *Sympetrum flaveolum* put in a solo appearance at Gibraltar Point NNR with a male seen on 10 July. Although ovipositing was observed in 1995 no exuvia or emergences were recorded in 1996 (Wilson, 1996; 1997).

At Baston Fen reserve in July there were unprecedented numbers of ruddy darter *Sympetrum sanguineum* and black-tailed skimmer. Over 250 ruddy darters were noted emerging from a mere on 17 July and 200+ on 28 July, whilst on the 17th 47 back-tailed simmers were counted over the ponds, meres, adjacent drain and River Glen. On 28 July 11 emperors *Anax imperator* were counted over the same water-bodies. On 22 July a male brown hawker *Aeshna grandis* was observed repeatedly chasing silver Y moths *Autographa gamma* over a bank of creeping thistles, but was unable to catch any.

In order to improve our knowledge of populations I would like to make a plea for more recorders to note approximate numbers (rather than"a few" or "less than last year") and to take note of pairs in tandem or females egg-laying. Recording cards help with the above and I can supply these if required.

New 10 km square records received for 1996 were as follows:

SE92	Winteringham Haven, *Anax imperator*
SK83	Grantham Canal, Harlaxton, *Erythromma najas*
SK85	Beckingham Ranges, *Anax imperator Sympetrum sanguineum*

SK87	Donkey Close, Doddington, *Enallagma cyathigerum, Ischnura elegans*
TA02	Barton on Humber, *Orthetrum cancellatum,* Pioneer Pit, *Sympetrum sanguineum* Far Ings, *Calopteryx splendens*
TA11	Killingholme, *Calopteryx splendens*
TA20	Freshney Bog, *Ischnura elegans*
TF01	St. Peter's Pool, Bourne, *Calopteryx splendens, Coenagrion puella, Anax imperator*
TF02	ponds, Bourne Woods, *Erythromma najas, Brachytron pratense, Orthetrum cancellatum*
TF10	The Lake, Deeping St. James, *Anax imperator*
TF11	Greatford Cut Langtoft, *Erythromma najas*
TF16	Southrey Wood, *Aeshna cyanea, Sympetrum striolatum*
TF16	Stixwould Wood, *Libellula depressa*
TF17	Chambers Plantation, Bardney, *Aeshna mixta, Aeshna cyanea, Aeshna grandis, Libellula depressa, Sympetrum striolatum*
TF21	The Lake Crowland, *Erythromma najas*
TF22	Counter Drain, Pode Hole, *Erythromma najas*
TF22	Vernatts' Drain, Pinchbeck, *Orthetrum cancellatum*
TF26	Kirkby Moor, *Sympetrum striolatum*
TF27	West Ashby meadows, *Coenagrion puella*
TF29	Thorpe Le Dale, *Libellula depressa*
TF32	garden pond Holbeach Hurn, *Libellula depressa*
TF35	East Fen Drain, Stickney, *Aeshna mixta, Sympetrum striolatum*
TF35	West Fen Drain, Stickney, *Aeshna grandis*
TF36	Sow Dale, *Aeshna mixta*
TF37	Stockwith Mill, *Coenagrion puella, Sympetrum striolatum*
TF41	South Holland Drain, Tydd St Mary, *Ischnura elegans, Orthetrum cancellatum*
TF42	garden pond, Gedney Dyke, *Sympetrum striolatum*
TF43	garden pond Holbeach Marsh, *Libellula depressa*

In addition to my own observations, records were gratefully received from the following: E Blood, D Bromwich, A F Brown, G P Catley, I Chadd, L Eke, A Faulkner, J P Ilynn, A J Gardner, K K Harrison, K M Heath, B Hedley, A Parker, P J Precey, J Rance, K D Robertson, K Seaton, K M Wilson.

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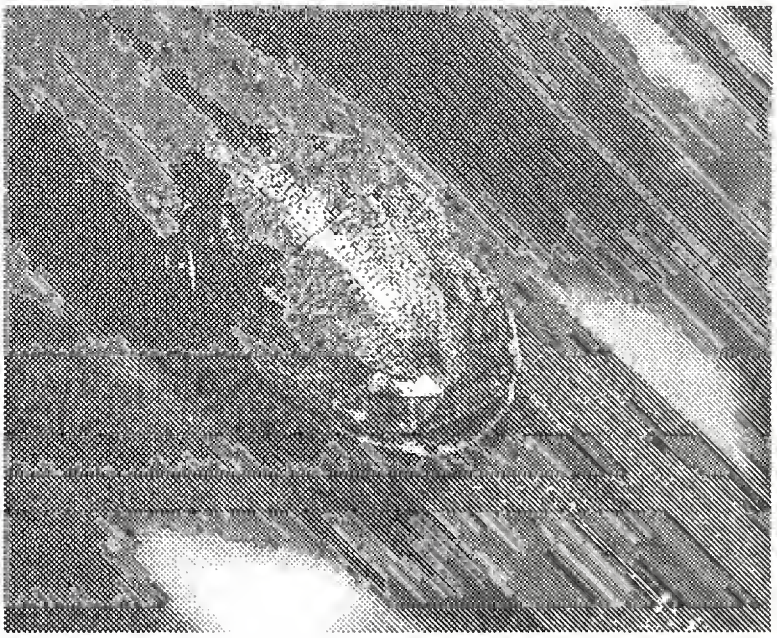
WILSON.K. 1997 Ed. Gibraltar Point NNR Wildlife Report 1996. LTNC pp 62-65.

SHIELD BUGS & OTHER BUGS

Annette E Binding

The most important find of 1996 was 2 specimens of *Neottiglossa pusilla* at Rauceby Warren on 11th & 20th June. The pale brown stripy adult matches exactly the grass they feed on and are almost impossible to see. Both were female and one laid eggs which hatched and developed through June. They fed on the seed heads of meadow grasses and were often found in groups or with the mother. The first nymphs reached adulthood in late July. The only other known specimen of this species is from Moor Farm in 1973 and is in the Gibraltar Point collection but is not referred to by Kirby (1988).



Neottiglossa pusilla - a grass feeding shieldbug, rare in the county photo A Binding

One species, *Eysacoris fabricii*, an attractive greenish bronze and white bug, had an amazing population explosion in 1996. It is usually found in fairly large numbers where it occurs but in 1996 they could be counted in hundreds and on a much wider variety of food plants than their usual food plant which is hedge woundwort *Stachys sylvatica.* In June adults began turning up in my garden in Washingborough, feeding on the seed heads of shining crane's-bill and later columbine seed heads. Although I found no evidence of breeding on the shining crane's-bill, egg batches began to appear on columbine in early July. Soon there were adults and nymphs everywhere feeding on a widening variety of plants in the garden including cleavers, honeysuckle berries, mint and lemon balm flowers and seed heads, golden-rod flowers and seeds and poppy seed heads. Most nymphs reached adulthood by the end of August when they could be seen in vast numbers but by mid September there were only one or two adults still to be seen.

This was not an isolated incidence. Mrs C Gallimore also had *E. fabricii* feeding on columbine in her garden in Grantham. Over a hundred specimens were counted at Great West Wood on 8th June, with similar numbers at Minting Park on 29th May and Tattershall Thorpe Carr Wood on 1st June. The species was also much more widespread with new site records from all over the southern part of the county. It will be interesting to see if the species occurs in such vast numbers in 1997.

Mrs Gallimore found the only two 1996 records of *Troilus luridus,* in her garden in April and at Market Deeping in September. Her garden also yielded the only *Elasmostethus tristriatus*. There have been sporadic records of the latter since the first record from Gibraltar Point in 1990. It is similar in appearance to the birch bug but feeds on the cones on the popular garden juniper and cypresses. The beautiful metallic blue *Zicrona caerulea* was recorded only once, by myself and Allan on 29th May at Minting Park Wood and there were seven records of the parent bug *Elasmucha grisea*, including an adult hibernating in reedmace at Whisby Nature Park on 24th March.

The birch bug *Elasmostethus interstinctus* was the commonest species in the year and the hawthorn shieldbug *Acanthosoma haemorrhoidale* and the forest bug *Pentatoma rufipes* were recorded in a number of gardens and woodlands, the latter being found more often in urban areas. I also found 5 adult *Legnotus limbosus* under a plank on the sunny side of a hawthorn hedge on Washingborough playing field on 25th April, probably coming out of hibernation. It hibernates underground, sometimes burrowing up to six inches deep.

Of the 12 species of lacebug found in the county by Kirby (1988), I found three: the spear thistle lace bug *Tingis cardui*, the creeping thistle lacebug *Tingis ampliata* and the gorse lacebug *Dictyonota strichnocera*. Seen through a lens or microscope they are very attractive little beasts and, as their names suggest, they look as if they are made of lace.

The nettle groundbug *Heterogaster urticae* is common in the county, on nettle. We found the species in countless hundreds near Longstongs Delph on 3rd September. Adults and nymphs were clustered on the nettle flowers giving the flowers a shiny appearance.

I found specimens of the almost completely flat common bark bug *Aneurus laevis* at College Wood, Hardy Gang Wood and Snakeholme Reserve in groups under the bark of dead wood. Those at College Wood consisted of adults and 5th instar nymphs which are yellow-orange with brown spots, conspicuous against the dark wood. Tony Warne and Roger Key found the much scarcer bark bug *Aneurus avenius* at Wickenby Wood and Hardy Gang Wood on the British Entomological Society Meeting on 8th - 9th June. This appears to be a new county record.

In September there were dozens of bugs climbing about on *Glyceria* at Pike Drain Marsh in Lincoln. These were the wingless form of the European chinchbug *Ischnodemus sabuleti*, first found in Lincolnshire 1970 and which, a hundred years ago, was known only from a single site in Surrey and is still expanding its range.

Reference KIRBY, P., 1988. Annotated list of the Heteroptera of Lincolnshire and South Humberside. Transaction of the Lincolnshire Naturalists' Union. **22**. 41-70.

MOTHS - Rex Johnson

Last year's moth report started: "The year proved to be a mothing year without parallel". 1996 was equally momentous. Two new macro-moths - the white point and the brindled white-spot, were found, with sighting of another species being very interesting but needing confirmation. A small number of long-lost macro species were re-discovered, several species normally only seen in small numbers had population explosions, and a number of species extended their range. New micro moths were discovered in the county, and our records for the two Lincolnshire vice counties considerably extended.

The new county checklist (Johnson, 1997), based on 50,000 records in the "Recorder" database was published in 1996 and is now available for reference. It includes details of all Lepidoptera species, and a chart showing presence or absence of records of macros over the period of the decade 1986-1995.

Migrants

The 1996 insect migration is extensively chronicled in Crafer (1996) which focuses on the main butterfly, moth and dragonfly immigrations to the U.K. and attempts to assess where the arriving insects have travelled from. Details of dates, weather patterns, species recorded nationally, etc., can be found in the journal.

The pattern of migration was prolonged, and the list of recorded migrants the longest ever submitted to Bernard Skinner, the national migrant recording officer. There were three main periods of migration, each bringing a differing assemblage of insects, with species from each migration recorded in Lincolnshire, and with a number of the earlier migrants breeding in the county, some therefore being recorded from early June to November.

The first migration peaked between 6th June and 10th June and continued for several days. It brought incredible numbers of silver Y's rush veneers, and the diamond-backed moth, and a few bordered straws, humming-bird hawks, etc. The second migration, starting on 21st July, was very short but it brought some rare butterfly and moth species including the bedstraw hawk. The third immigration, from 3rd August to around 25th August, brought a large range of species, including the great brocade, which was widely seen in Lincolnshire. Remembering that early migrants completed further generations after arrival, these dates, help to put the species records below into context.

White-point *Mythimna albipuncta* Rippingale Fen, VC53, 16/8/1996, recorded by John Lamin. This is a new species to the county. It is a known immigrant/transitory resident, most frequently found in August and September. According to Skinner (1984), it breeds "in southern England in favourable seasons... occasionally becoming temporarily established in the south-east". It has been "recorded in all coastal counties from Norfolk to Cornwall...and occasionally inland". The larvae feed on grasses.

Margaritia sticticalis was recorded three times between 10/8/96 and 21/8/96 in VC54 R& WJ, JJ, KMSW).
Rush veneer *Nomophila noctuella* recorded dozens of times, many too many to list, between late May/early June 1996, and November 1996, across the county.

The vestal *Rhodometra sacraria* Willingham Forest, 3/11/96 (CS).
The gem *Orthonama obstipata* Gibraltar Point, 27/7/96 (DB).
Convolvulus hawk-moth *Agrius convolvuli* was recorded four times in VC54 between 19/8/96 and 6/9/96 (KMSW, JJ, CS, MED).
Humming-bird hawk-moth *Macroglossum stellatarum* many both VCs, 6/6/96-24/9/96.
Bedstraw hawk-moth *Hyles galii* Gibraltar Point, 19/8/96 (KMSW).
Dark sword-grass *Agrotis ipsilon* both VCs, 12/6/96-15/10/96.
Pearly underwing *Peridroma saucia* several records, both VCs, 21/9/96-25/10/96.
Small mottled willow *Spodoptera exigua* in both VCs 14/8/96-11/10/96 (R & WJ, AB, JP, KMSW, JL).
Scarce bordered straw *Helicoverpa armigera* recorded in VC54, 11/8/96 at Muckton (GW), 19/8/96 at Gibraltar Point (KMSW).
Bordered straw *Heliothis peltigera* many records, both VCs, 7/6/96-14/9/96.
Silver Y *Autographa gamma* was recorded across the county, sometimes hundreds to MV at a time. It was seen from June to November.

Micro-moths

The new check-list (Johnson, 1997) includes the first updated list of micro-lepidoptera since of GW Mason's definitive lists (Mason, 1905 -1908). Since interest in the micros was revived a few years ago, between my efforts and those of a small number of LNU recorders, over 300 additional micro-lepidoptera species have been added, with hundreds of additional vice county records. Details of new species and records are too extensive to include, but in the new publication. Mason recorded 104 species which we have not yet rediscovered in recent years, but I am sure that some of these will emerge in the near future and there are many micro species known to be in neighbouring counties which have yet to be discovered in Lincolnshire, so the future for recording micros is bright.

On receipt of the initial list of Lincolnshire micro records for 1996, the prominent micro-lepidopterist Maitland Emmet wrote "The Lincolnshire lepidopterists have certainly been busy, and to excellent effect. I think I have 110 new vice county records, 96 of them for VC53. It is a joy to see so many unrealistic gaps on the maps filled at last. For some common species, VC53 was the only vice county in the whole of England without a record, and for some the whole of Britain - or almost so".

Macro-moths

In addition to the migrant **white point**, the second new macro for 1996 was the **brindled white-spot** *Paradarisa extersaria* (Hb.), which came to Mercury Vapour light at Temple Wood on 17th June, recorded by R & WJ, and JL. The adults normally fly in May and June in woodland and are considered to be "locally widespread in southern Britain, ranging northeastwards to Norfolk and northwestwards to Denbighshire. (Skinner, 1984). The Temple wood specimen is about at the northern edge of this range.

In the 1990s it has been usual for something over 400 of the larger moth species to be recorded each year. In 1993 there were 425 species, in 1994, 441 species. 1995 produced an record 475 species, well over 75% of all macros ever recorded in Lincolnshire. The 1996 total is 474 species, another indicator that 1996 was an especially good year.

The alder moth, barred hook-tip, clay triple-lines, maiden's blush, tawny-barred angle, birch mocha, clouded magpie, yellow-horned and yellow-line quaker - all usually seen in small numbers - were plentiful while the beautiful carpet, scorched carpet and pretty chalk carpet, irregularly seen in small numbers, had a surprising number of sightings.

The rare beech-green carpet, Brussel's lace, chocolate-tip, currant clearwing, dentated pug, flame carpet, plain pug, hornet moth and scarce vapourer (found by JP as larvae on

22nd June at Messingham), all turned up as singletons or in small numbers.

Two surprising finds were Haworth's minor, to John Petyt's MV light at Bottesford on 18th August (not in the typical habitat - the larvae feed in stems of cotton grass etc. in marshy areas, but the adjoining Grange Lane nurseries, and nearby pond/heath-land at Ashbyville, may account for the occurrence), and the red-belted clearwing, found by Adrian Gardiner at Bourne on 21st June (not recorded in Lincolnshire since found at Market Rasen, 1878-1880, by F.A.L. Larvae feed in bark of apple, pear and hawthorn.

Another rarity, the old lady, which I have yet to see in Lincolnshire, was found by John Lamin at Bulby on 6th August as a number of wings of several specimens under a long-eared bat roost! The bats obviously find it more easily than I do.

Some species have extended their range considerably. The great prominent turned up in a number of woodlands and the pine hawk, recently very scarce in Lincolnshire (only in one locality near Woodhall Spa), turned up in over twenty sites. It was seen by most recorders, and now seems established across the county. There were numerous records of privet hawk, until recently confined to the very south of Lincolnshire, and many records for the small elephant hawk, and for Vine's rustic, obviously moving across the county.

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Acknowledgements

A, A & J Binding, S Botham, K Bradshaw, J Bratton, S Bright, D Bromwich, D Brown, D Burrows, P Cawdell, G Clayton, A Credland, M Crick, ME Dawson, G Ellershaw, AM Emmet, D Fairchild, A Faulkner, AJ Gardiner, N Goom, S Green, WG Hoff, J Jaines, ANA Johnson, WJ Johnson, M Joy, RS Key, J Lamin, AS Lazenby, R Lorand, A McGovern, A McGowan, P Medland, S Meek, J Ostler, J Petyt, N Pike, P Porter, C Potts, J Rance, K Robertson, K Rowland, M Russell, R Saunders, D Sheppard, K Skelton, R Skelton, C Smith, M Speight, M Tyszka, V Wilkin, KMS Wilson, G Wright.

BUTTERFLIES - Allan Binding

This year's butterfly migration was quite exceptional. Thousands of painted lady *Cynthia cardui* butterflies were seen flying across the coast of Britain and heading north throughout the country. They soon started to run out of their usual larval food plants of thistle and nettle and transferred to other species. My wife and I found hundreds of larvae feeding on lesser bugloss at Laughton Forest on the 20th July and many adult butterflies.

Clouded yellow *Colias croecus* appeared in June at Rimac and was recorded at over twenty sites, the last record being from Mr K D Robertson at Great Sturton on the 14th September. This was the largest migration of this species since the early 1980s.

After a very poor spring, with orange tips *Anthocharis cardamines* quite late to appear, many other species appeared in good numbers in late May and early June. Meadow brown *Maniola jurtina*, ringlet *Aphantopus hyperanthus* and gatekeeper *Pyronia tithonus* were very common. Holly blue *Celastrina argiolus* had a very good year, recorded from at least 37 sites between May and September and brown argus *Aricia agestis* was seen at many sites in South Lincolnshire, including Gibraltar Point. Essex skipper *Thymelicus lineola* was recorded from seven sites in South Lincolnshire, although I still believe this butterfly is very under-recorded. The Duke of Burgundy Fritillary *Hamearis lucina* was seen again in south west Lincolnshire by Peter Cawdell on the 24th May, four adults were seen at the edge of this site on a roadside verge, no other records were received.

Although many species of butterflies had a very good year, some did not. Purple hairstreak *Quercusia quercus*, wall brown *Lasiommata megera*, common blue *Polyommatus icarus*, small copper *Lycaena phlaeus* and large white *Pieris brassicae* appeared not to be as plentiful as in previous years.

Mark Tyszka reported in the October issue of the Lincs Branch Butterfly Conservation newsletter that a Camberwell Beauty *Nymphalis antiopha* had been seen in April and a Large Tortoiseshell *Nymphalis polychloros* at Kirkby Moor in August. The Large Tortoiseshell could have been a release or misidentification.

Thanks to the LNU members, LTNC wardens and others provided butterfly records. I received around 2,000 records for 1996. The butterfly database now holds over 40,000 records from the 1700's to the present day. Butterfly records for past years would be welcome, including common species from your garden or any records of species you have seen in Lincolnshire. Please give as much information as possible.

FLIES - Andy Godfrey & Jillian Binding

Flies other than hoverflies - Andy Godfrey

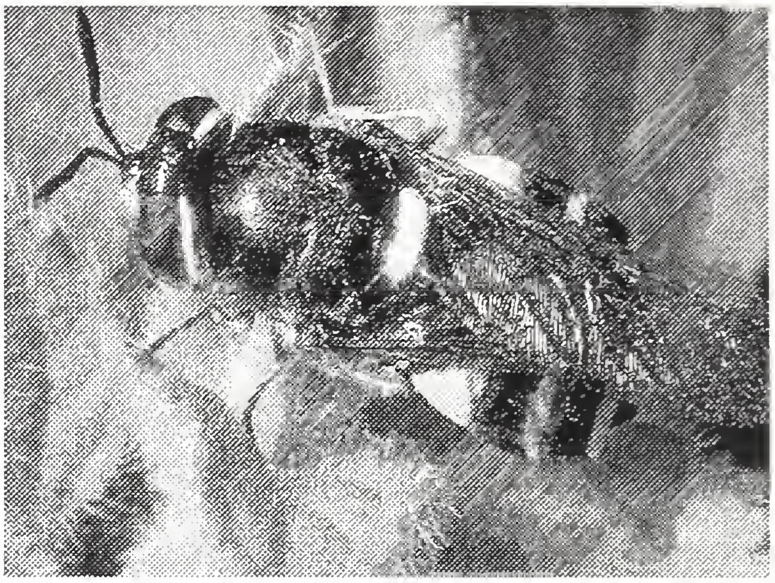
An important event for recording flies was the meeting at Horncastle (see beetle report) attended by three dipterists Jill Binding, Jon Cole and myself and resulted in many new records. Species of note were the Nationally Scarce *Tetanops myopinus* (Otitidae) and *Lispe caesia* (Muscidae) from Gibraltar Point and *Chiorops troglodytes* (Chloropidae) from Rauceby Warren. At Calceby Marsh the local dolichopodid fly *Thrypticus tarsalis* was recorded, as well as the Nationally Scarce snail-killing fly *Psacadina verbekei,* a parasite of water snails and the local soldier flies *Nemotelus nigrinus* and *N pantherinus.* The latter is of interest since most of the records are coastal. At Donna Nook *Lispe caesia* was again recorded, along with two other Nationally Scarce species, the small black chloropid *Eutropha fulvifrons,* which is associated with foredunes and the boldly marked *Trixoscelis marginella.* At North Somercotes a number of dune specialities was again recorded including the Nationally Scarce *Melieria cana* (Otitidae) and the local flesh fly *Senotainia conica* (Sarcophagidae) and *Helina protuberans* (Muscidae). The most interesting species at Wickenby Wood was an Anthomyzid fly *Anthomyza macra* currently only known from a handful of British localities and not yet officially added to the British list.

A reared parasite fly from Grebby passed to me by Bill Hoff was identified as *Carcelia gnava* by Nigel Wyatt of the Natural History Museum. This appears to be the first Lincolnshire record of this scarce species.

Dr Martin Drake has published an account of the larvae of the Red Data Book soldier fly *Oxycera morrisii,* occurring in spring-fed chalk streams in Lincolnshire (Drake 1997). Plans are in hand to try to locate the adults in 1997.

In July 1996 members of the national Diptera Recording Scheme visited North Lincolnshire whilst based at York. Sites visited included Laughton Common, Scotton Beck Fields and Messingham Sand Quarry. Most of the records have yet to filter through, but a number of interest were found including two spectacular black and yellow species of soldier fly *Stratiomys potamida* and *S. singularior* at the latter site. These breed in shallow water and both are Nationally Scarce .

Hoverflies - Jillian Binding
The year started very well for hoverflies but the scorching heat of July and August led to greatly reduced numbers of the summer species. However, 3 notable species were recorded in the year. *Cheilosia pubera* is written up separately elsewhere in this issue.


The soldier fly *Stratiomys potamida* turned up at Messingham Sand Quarry Nature Reserve photo Roger Key

Two other very good records were from Alan Lazenby. In June he found *Portevinia maculata* at Goslings Corner Wood. This is a spring species which develops in the bulbs of ramsons and wherever the plants is found there is a chance that this hoverfly will be close by. So far I have not been lucky enough to find it but will keep searching. The other was *Xanthandrus comtus*, the larvae of which are predatory on micro-moths caterpillars and the adult is often found near woodland edges. This is a species that was in decline for a number of years but has recently been recorded more frequently again and appears to be extending its range once again. This is the first Lincolnshire record that I know of although it has been found scattered through the Midlands and Southern Britain.

Statuses quoted for all flies are as are in Falk, 1991. I have received many more records and specimens of hoverflies this year and I would like to thank all contributors and say that Andy Godfrey or I are happy to receive specimens or assist in identification. In the next eighteen months I should finish researching the old journals for records to enable us to produce an up-to-date county list.

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BEETLES - Roger Key

1996 was possibly the most productive year for beetle recording since the turn of the century, with 69 new species found. This resulted mainly from a joint meeting of the national coleopterists' group and the British Entomological & Natural History Society at Horncastle College on June 7th-10th. 14 coleopterists put in over 30 man-days of work in the county, resulting in over 3000 records and added 55 new species to the county (table). The meeting concentrated on the Lincolnshire Limewoods, favoured by Canon Fowler, one of the country's most renowned coleopterists in the late 19th century and a number of species turned up there which had not been seen since his time. Statuses quoted are as in Key (1996) and Hyman & Parsons (1992 & 1994) and abbreviated: N - Nationally Scarce (categories A & B), R1 - Red Data Book 1 (Endangered), R3 - Red Data Book 3 (Rare).

Although many of the new species from the meeting were small and inconspicuous ones, in difficult groups, others were not. The weevil *Dorytomus tortrix* is large and shiny brown, feeding on aspen catkins. Although never seen in Lincs before, it was abundant in College Wood, found by four separate entomologists at once! *Trachodes hispidus* (**NB**), found new to Lincs by Adrian Fowles at Fulsby Wood, is a bizarre weevil feeding in old tree stumps and is patterned like a piece of dead wood and has numerous erect scales. A species I had searched for in vain for many years is the sea-lavender weevil *Pseudaplemonas limonii* (**NB**), well camouflaged with its purple colouration as a dead flower fallen to the base of the plant where it lives. It is common on the Norfolk coast but had not been seen in Lincs. Dave Boyce found it at Frampton Marsh.

Ground beetles are one of the best known groups of beetles in Britain and it is unusual to find new species for Lincs. Brian Eversham found *Amara anthobia*, new, at Donna Nook. Leaf beetles are also well known, but two new ones were found, I found the metallic blue, thistle-feeding *Lema cyanella* at Wickenby wood, while Bob Marsh found the metallic blue flea beetle, *Psylliodes weberi* on watercress at Tetney Blow Wells. Another noteworthy new find was the ivy bark beetle *Kissophagus hederae* (**NB**), which 3 coleopterists found at Rauceby Warren, along with the ivy feeding woodworm beetle *Ochina ptinoides*, which was last seen in the county in 1908 at Freshney Bog.

In addition to the new species a record of particular note on the meeting was the wetland ground beetle *Badister dilatatus* (**NB**) at Potterhanworth Wood, which Brian Eversham also found at Calceby Beck Marsh. It has not been seen in Lincolnshire since 1860 when E.C. Rye found it at Boston (Rye, 1860). Another wetland species of note was the small click beetle *Oedostethus quadripustulatus* (**NA**), found by Adrian Fowles at Rauceby Warren, otherwise only known in the county as a dubious record from Barnetby-le-Wold. Many other records of species of note resulted from the meeting, far too many to be detailed here, and the results are being fully written up for English Nature (Key, in prep), who helped organise the meeting.

Beetles new to the county found on the meeting at Horncastle.

Carabidae - ground beetles	
Amara anthobia	Donna Nook BCE
Ptiliidae - featherwing beetles	
Acrotrichis strandi **N**	Freshney Bog RJM
Acrotrichis danica	Hatton Wood CJ
Acrotrichis rosskotheni	Hatton Wood CJ Whisby Pits CJ
Acrotrichis henrici	Whisby Pits CJ
Acrotrichis thoracica	East Barkwith CJ
Acrotrichis monatndoni	Mareham on the Hill CJ
Acrotrichis insularis	Wragby CJ Mareham on the Hill CJ
Nephanes titan	East Barkwith CJ
Ptenidium formicetorum	Wragby CJ
Ptenidium fuscum	Wickenby Wood RJM
Leiodidae - shining fungus beetles	
Agathidium seminulum	Kirkby Moor DL
Staphylinidae - rove beetles	
Pseudopsis sulcata	Hameringham CJ
Omalium rugatum	Hatton Wood CJ Whisby Pits CJ
Carpelimus elongatus	Hatton Meadows CJ
Carpelimus marginellus	East Barkwith CJ
Carpelimus impressus	Whisby Pits CJ
Stenus bifoveolatus	Kirkby Moor DL
Euaesthetus ruficapillus	Hatton Meadows CJ Whisby Pits CJ Potterhanworth Wood DL
Philonthus micantoides	Saltfleetby-Theddlethorpe AD
Gabrius pennatus	Calceby Beck Marsh RSK
Staphylinus erythropterus	Linwood Warren AJW
Gyrophaena joyoides **N**	Potterhanworth Wood DL
Dochmanota clancula **N**	Freshney Bog RJM
Calodera aethiops	Kirkby Moor DL Rauceby Warren DB
Myllaena intermedia	Potterhanworth Wood DL
Amischa forcipata	Calceby Beck Marsh RSK
Atheta vilis	Whisby Pits CJ
Atheta malleus	Kirkby Moor AW
Atheta volans	Whisby Pits CJ
Oligota picipes	Hameringham CJ Wragby AW East Barkwith AW
Oligota pumilo	Mareham on the Hill CJ
Oligota pusillima	East Barkwith CJ Mareham on the Hill AW Hameringham AW
Pselaphidae	
Bibloporus bicolor	Hatton Wood CJ
Euplectus infirmus	Hatton Wood CJ
Scarabaeidae - scarab beetles	
Onthophagus joannae	High Barn, Oxcombe APF
Anobiidae - wood-boring beetles	
Ernobius nigrinus	Kirkby Moor AW
Cryptophagidae - small fungus beetles	
Atomaria rhenana **N**	Donna Nook RJM
Scraptiidae - tumbling flower beetles	
Anaspis thoracica **NA**	Wickenby Wood AJW Hardy Gang Wood RSK

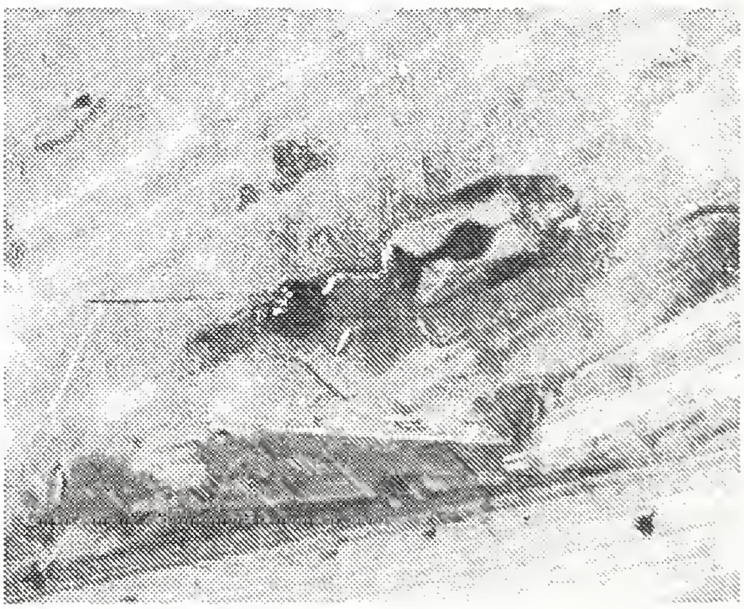
Tenebrionidae - darkling beetles	
Gonodera luperus	Rauceby warren BCE
Chrysomelidae - leaf beetles & flea beetles	
Lema cyanella	Wickenby Wood RSK
Psylliodes weberi	Tetney Blow Wells RJM
Cimberidae - primitive weevils	
Cimberis attelaboides	Linwood Warren AJW Kirkby Moor AW
Brenthidae - seed and stem weevils	
Ischnopterapion modestum	Calceby Beck Marsh APF/RSK
Pseudaplemonas limonii (**NB**)	Frampton Marsh DB
Cyanapion gyllenhali (**NB**)	Wickenby Wood APF
Oxystoma cerdo (**NB**)	Wickenby Wood AJW Hardy Gang Wood AJW
Curculionidae - weevils	
Ceutorhynchus alliariae	Swallow Wold AJW
Ceutorhynchus depressicollis	Rauceby Warren APF
Ceutorhynchus turbatus	Rauceby Warren APF
Dorytomus tortrix	College Wood AB/RSK/HH/ABD
Trachodes hispidus (**NB**)	Fulsby Wood APF
Rhampus oxyacanthae	Rauceby Warren APF
Scolytidae - bark beetles	
Kissophagus hederae (**NB**)	Rauceby Warren APF/HH/ABD
Hylastes brunneus	Hatton Wood ABD

Recorders AB - Annette/Allan Binding, ABD - Tony Drain, AJW - Tony Warne. APF - Adrian Fowles. AW - Alex Williams. BCE - Brian Eversham CJ - Colin Johnson. DB - Dave Boyce. DL - Derek Lott. HH - Harry Henson. RJM - Bob Marsh. RSK Roger Key.

Other than on that meeting, there were many other significant finds, the first of which was actually from 1995. Andy Godfrey sent various beetles for identification in that year and I had no time to examine them until recently. Among them were the all-black malachite beetle *Dasytes niger* (**NA**), and the rove beetle *Quedius ventralis* (**NB**) from Grimsthorpe Park on the 10th June. Both of these are predatory on other dead wood insects. *Dasytes niger* has never been found north of Berkshire before. Two others he found new to Lincs in 1995 were from the old gravel pits at Tattershall. One, the ant beetle *Anthicus bimaculatus* (**NA**), is most unusual inland, more usually found on sand dunes, the other a tiny beetle living in moss, *Neuraphes angulatus*.

Andy Godfrey also found species of significance in 1996. In a rot-hole in an oak tree at Hagnaby, he added two species new to the county on 30th April, one of them, *Aderus populneus* (**NB**) also being in a family, Aderidae, never seen before. These are small beetles resembling ants. While the other new species *Prionocyphon serricornis*, a small rounded brown species, is typical of water-filled rot-holes, aderids are thought to be more typical of dry dead wood. A third species from the rot hole was *Trachodes hispidus* (**NB**) on 16th August which had been added to the county list earlier in the year (see above).

Andy also found the water beetle *Hydraena nigrita* (**NB**) new to Lincs from Laceby Beck on the 5th March and also found another water beetle, *Ochthebius nanus* (**NB**) at Tetney Blow Wells on 8th April and again on 24th May, the first since 1908, which was also from Tetney. John Bratton found the handsome metallic bronze reed beetle *Donacia crassipes* (**NB**), which feeds on water lilies, in the Counter Drain and a small beetle *Telmatophilus brevicollis* (**R3**) on branched bur-reed at Baston Fen (Bratton, 1997), both new to Lincs 20th July. I found *Demetrias imperialis* (**NB**) a small brown ground beetle with black markings in reedmace at Crowland Falls on 11th February The only other record was by Adam Garside at Willoughby Gorse in 1986 .



Demetrias imperialis from *Typha* leaf sheaths photo Roger Key

The meeting at Moulton Marsh on 15th June produced one new species, the small black rove beetle *Neobisnius villosulus*. The scarce coastal ground beetle *Bembidion ephippium* (**NA**) was abundant on the dried out mud surface of saltmarsh pools. It has only once before been found in the county, at Gibraltar Point in 1983.

Alex Williams from Kent was asked by English Nature to search for colonies of the endangered leaf beetle *Cryptocephalus coryli* (**R1**), a handsome orange and black species that feeds, not on hazel, but on birch, and managed to find just a single specimen at Kirkby Moor on 7th June. While searching he also came across a related metallic blue species *Cryptocephalus parvulus* (**NB**), also on birch, the first in Lincolnshire since 1949. He also found the blood-red weevil *Apion rubiginosum* (**R3**) on sheep's sorrell at Moor Farm on 25th July. Another dry ground species was the dung beetle *Aphodius ictericus*, found by Dave Sheppard at Roberts Field on 19th July, the first time in the county since 1894.

I recently met Dr Joanna Francis from Yorkshire who has been trapping beetles in woods across the county as part of a project evaluating farm woodland for the Ministry of Agriculture. She produced a number of records of ground beetles of significance, including the second county record of *Synuchus nivalis* (at 3 sites, Mouse Holt, Normanby Dales and Thoresway Grange), last seen in 1904, and 3rd records of *Bembidion unicolor* at Chambers Wood and *Pterostichus vernalis* and *Pterostichus versicolor* at Langton Hill.

Not often are insects admitted to the list without seeing a specimen, but the exit holes of the jewel beetle *Agrilus sinuatus* (**NA**) in hawthorn timber - shaped like a letter D on its back, are so distinctive that John Bratton's record of this species' holes from Uffington can be accepted. Other deadwood species include the flat beetle *Pediacus dermestoides* from Haugham Wood on 19th May, and the red and bronze fungus beetle *Triplax aenea*, found by Colin Faulkner at the Boston Road pits at Gosberton in May. Both are the third sites for the species in the county. Martin Drake found the large darkling beetle *Prionychus ater* (**NB**) in decaying wood of an old willow at Market Deeping on 21st April. The only other record is from a similar habitat at Uffington in 1992. Not new, or even particularly scarce in the county is the darkling beetle *Scaphidema metallicum* (**NB**). However at Carlton Scroop on 7th April this species was incredibly abundant - every piece of fallen wood had several specimens underneath it. I have previously only found occasional individuals.

Named varieties are unusual among beetles. An ant beetle found under a stone at Castle Bytham Quarry on 29th March proved to be *Anthicus antherinus* var *ireniae*, which is all black rather than the usual red and black. The variety has not to have been found in the county before, although the species is common.

Finally, one very handsome beetle that turned up new to the county is unlikely to be welcome. The bright scarlet lily beetle *Liliocerus lilii* (plate 15) can be a devastating pest of various members of the lily family, including garden lilies and Solomon's seals. It was found in their garden in Grantham by Mrs C Gallimore.

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ACULEATE HYMENOPTERA (BEES, WASPS & ANTS)
Michael Archer

The current list of the aculeate Hymenoptera (Bees, Wasps & Ants) of Watsonian Lincolnshire consists of 270 species (box, overleaf), which represents about 46% of the British list. The statuses quoted are as in Falk (1991).

At least two of these species may be questioned as possible mis-identifications. First, the bee *Melecta luctuosa* (Scopoli) (RDB1 1 - Endangered), which was recorded by C.F. George at Kirton-in-Lindsey, pre-1889 (George, 1888). Before this record the species most northerly locality was in Essex. Its host is *Anthophora retusa* (Linn.), which has not been found in Lincolnshire. It is probably a mis-identification of *M. albifrons* (Forster), which C.F. George later recorded from Kirton-in-Lindsey pre-1907 (George, 1906). I recently re-discovered *M. albifrons* at Rauceby Warren (male, 4 May 1992). *M. luctuosa* has undergone a dramatic decline since 1900 and now may be extinct, so confirmation of its presence in Lincolnshire is unlikely. If the specimens of C.F. George could be found the matter could be resolved.

Number of species of aculeate Hymenoptera in Watsonian Lincolnshire by family.

Family	English Name	N species
Dryinidae	no English name	3
Bethylidae	no English name	2
Chrysididae	ruby-tail or cuckoo wasps	13
Mutillidae	velvet ants	1
Sapygidae	solitary wasps	2
Formicidae	ants	17
Pompilidae	spider-hunting wasps	24
Eumenidae	mason wasps	12
Vespidae	social wasps	7
Sphecidae	solitary wasps	69
Colletidae	solitary bees	9
Andrenidae	solitary bees	32
Halictidae	solitary bees	26
Megachilidae	solitary bees	12
Anthophoridae	solitary bees	19
Apidae	social bees	21

Second, the cleptoparasitic wasp *Nysson interruptus* (Fab.) (RDB 2 - Vulnerable) was recorded by Goulding at Torksey (male, 11 June 1901) (Woodruffe-Peacock, 1902). Before this record the most northerly record was from Oxfordshire. Its host is another solitary wasp *Argogorytes fargei* (Shuckard) (Nationally Scarce A) which has been found in Lincolnshire. The host was found by Goulding with *N. interruptus*. Possibly this record can be accepted, but confirmation is needed. Again the discovery of the specimens of Goulding would resolve the problem.

I have not yet explored collections of aculeate Hymenoptera in Lincolnshire museums and I would be grateful for information on such collections, no matter how small. The following remarks refer only to the aculeate wasps (excluding Dryinidae & Bethylidae) and bees which represent my main interest.

The earliest records I have been able to find were published mainly in the Naturalist from 1886 until 1908. Some 14 names of people, including J.W. Carr, C.F. George and the Rev. A. Thornley, have left records of 86 species. They recorded the bumble bees *Bombus distinguendus* Moratwitz (Nationally Scarce B) and *B. subterraneus* (Linn.) (Nationally Scarce A), and the cuckoo bee, *Psithyrus rupestris* (Fab.) (Nationally Scarce B), which were last seen in Lincolnshire by M.W. Graham during the 1930s.

M.W. Graham published his results in the Entomologist's Monthly Magazine from 1941 until 1950. During 1992 I corresponded with M.W. Graham when he checked the identity of his specimens where there had been changes in species nomenclature and species splits. I did not find out where his specimens were deposited and would value help in finding them. M.C. Graham added 131 wasp and bee species to the Lincolnshire list, although he recorded 210 species. He was fortunate to find species like the spider hunting wasp *Ceropales maculata* (Fab.), *Mellinus crabroneus* (Thunberg) (Red Data Book 1 - Endangered), *Bombus ruderatus* (Fab.)(Nationally Scarce A), *B. ruderarius* (Muller) and *B. sylvarum* (Linn.) (Nationally Scarce B) which are now extinct in Lincolnshire.

During the 1930s, H.P. Jones recorded in Lincolnshire and deposited his specimens in Nottingham museum. So far I have examined about half of this collection and found that he recorded 19 species, of which four species were new to Lincolnshire. In the 1930s and 1940s, H. Britten recorded in Lincolnshire, mainly at Grantham, and deposited his specimens in Manchester University museum. I have examined this collection and found that it consists of 52 species, of which five species are new to Lincolnshire. Recently I have found some of the Grantham material is at Liverpool museum, which I will need to examine in the future.

I made my first recording visit to Lincolnshire during 1983 visiting several localities before choosing Risby Warren for repeated visits from 1984 onwards. Since then I have made a study of the aculeate wasps and bees at Messingham Sand Quarry, Saltfleetby-Theddlethorpe N.N.R., Rauceby Warren, Kirkby Moor and Gibralter Point. I have been fortunate in finding 165 species, including 15 species new to Lincolnshire.

In recent years I have received records from 17 people which included seven new species to Lincolnshire. The new species are as follows. The ruby-tailed wasps *Omalus panzeri* (Fab.) and *Hedychridium cupreum* (Dalhbom)(R.S. Key, P. Kirby & S. Lambert at Risby Warren on 2 Aug. 1987). *O. panzeri* is a nationally widespread species which is parasitic on species of solitary wasp of the genus *Mimesa*. *H. cupreum* is Nationally Scarce category B species, parasitic on the solitary wasp *Tachysphex pompiliformis* (Panzer).

The ruby-tailed wasp *Chrysis impressa* Schenck (W.G. Hoff, Scremby, Spilsby, female, May 1988) is nationally a common species parasitic on the mason wasps *Ancistrocerus parietinus* (Linn.) and *A. trifasciatus* Muller, both of which have been found at Scremby.

The hornet *Vespa crabro* Linn. (W.G. Hoff, Gunby Hall Estate, 18 Aug. 1984). Since the mid-1970s it has been increasing its range by spreading north.

Queen "black" or "super wasp *Dolichovespula media*, new to Lincs in 1993. photo R S Key

The "super" wasp *Dolichovespula media* (Retzius)(D. Sheppard, Bourne 1993, Grantham 1993). This is a new species for Britain, first recorded in Sussex in 1980, so it has taken 13 years to reach Lincolnshire.

The bee-wolf (a solitary wasp that stocks its nest with honey bees and large solitary bees) *Philanthus triangulum* (Fab.)(S.P.M. Roberts, Gibralter Point, 22 Aug. 1996). Another species that has increased its range, particularly during the 1990s, from the south-east of England. It was included in the Red Data Book as Endangered, (Shirt, 1989, Falk, 1991), but now warrants only Nationally Scarce B and may soon become widespread.

The bee *Colletes halopilus* Verhoeff (Nationally Scarce A)(D.S. Hill, Gibralter Point, female, 16 Sept. 1982). A species which is associated with upper margins of salt marshes.

I would like to encourage recording and study of aculeate Hymenoptera in Lincolnshire. I am willing to confirm or identify specimens of those wishing to take up their study. Beginners would also find it useful to contact: Bees, Wasps and Ants Recording Society, c/o Robin Edwards, 5 St. Edward's Close, East Grinstead, West Sussex RH19 1JP. I am also willing to identify small numbers of mounted specimens.

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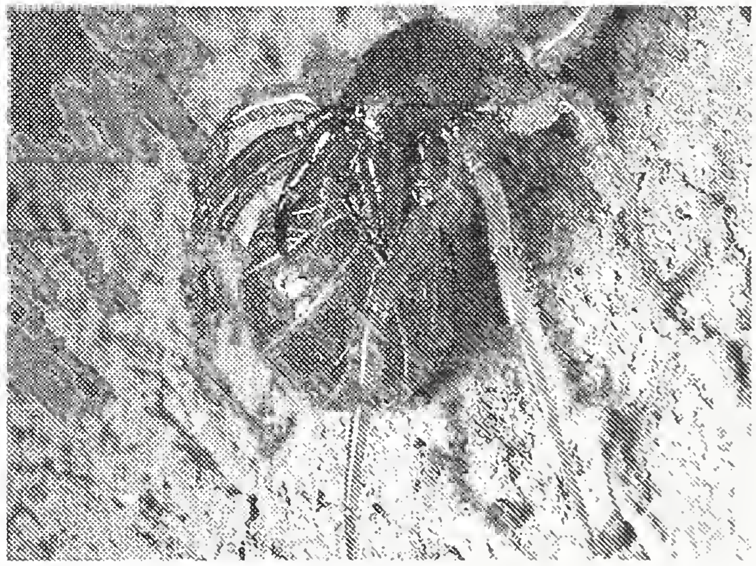
Dr Michael Archer is a founder member and president of the Bees, Wasps and Ants Recording Society (BWARS). He is Aculeate Recorder for The Lincolnshire Naturalists' Union, the Yorkshire Naturalists' Union and collated records of solitary Aculeates for Leicestershire. During 1997, he is President of the Yorkshire Naturalists' Union.

SPIDERS - Roy Kent

Once again, I am indebted to the Lincolnshire Naturalists' Union members for spider records during 1996. Over eighty records from a wide range of habitats came from Annette, Jill and Allan Binding. Washingborough Hall Hotel was the home of the "spitting" spider *Scytodes thoracica*. This is a first for the county. The orb web spider *Larinioides sclopetarius* was first recorded in 1901, then in the 1950's by George Whatmough, and now in 1996 from Whisby Park. It is good to see that it has survived for almost a century.

Roger Key sent me a comprehensive list of over 150 records from 1996 and earlier. It includes a new orb-web spider to the county, *Neoscona adianta* found by Brian Eversham at Conesby Mine. From the same locality Mr Eversham recorded a spider which, like the *Larinioides* above, is obviously a survivor! The woodlouse spider *Dysdera erythrina* was previously recorded in 1886, 1898 & 1899 by Wallis-Kew, Smith and Woodruffe-Peacock, and more recently in 1954 by George Whatmough. *(editor's note - the habitat at this site has since been destroyed).*



Woodlouse spider with pill woodlouse photo Roger Key

Alex Williams, an arachnologist from Kent attended the meeting at Horncastle College(see beetles) and recorded numerous species in the area. They included the crab spider *Philodromus collinus* from Kirkby Moor the second county record, which I found first in 1991 from Laughton Woods. I was pleased to see the comb-footed spider *Steatoda phalerata* from Moor Farm and Kirkby Moor and the wolf spider *Pirata latitans* from Kirkby Moor in Mr Williams' lists. The former is listed in the old Red Data report for Lincolnshire (Smith, 1988) the latter was first reported in 1898 by Adrian Woodruffe-Peacock, then in 1960 by George Whatmough and now in 1996 from Kirkby Moor.

Over the past few years I have had some very interesting records from Amanda Borrows. Although she is now out of the county, she visits frequently and always produces unusual records. I'm delighted to report two spiders new to the county, *Agroeca inopina* ♀ from Donna Nook and the jumping spider *Bianor aurocinctus* ♂ from Kirkby Moor. The former is well known in southern counties and is typical of coastal dunes, but the latter is Nationally Scarce Category A (Merrett, 1990) and has been found only in about a dozen localities in England. It is typical of short vegetation in dry places like heathland and dry grassland. Both records were verified by Dr Roberts of the British Arachnological Society.

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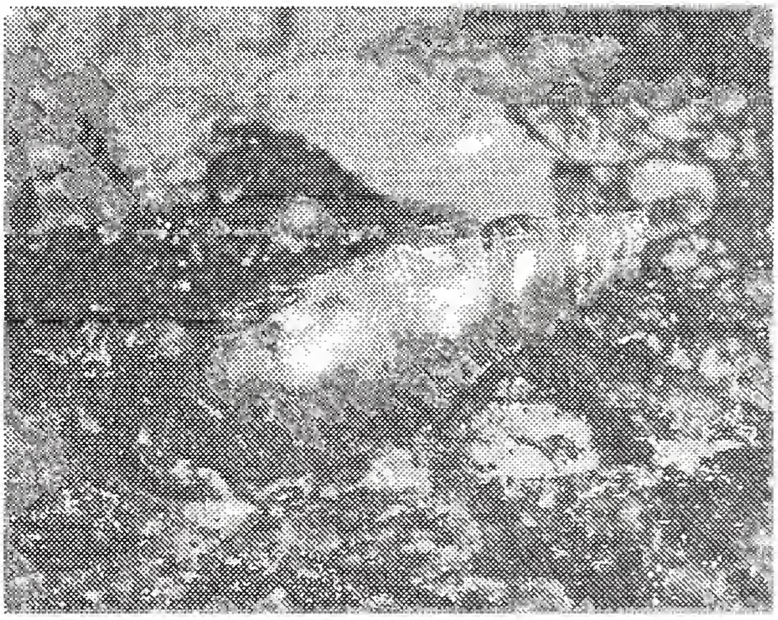
MOLLUSCS - John Redshaw

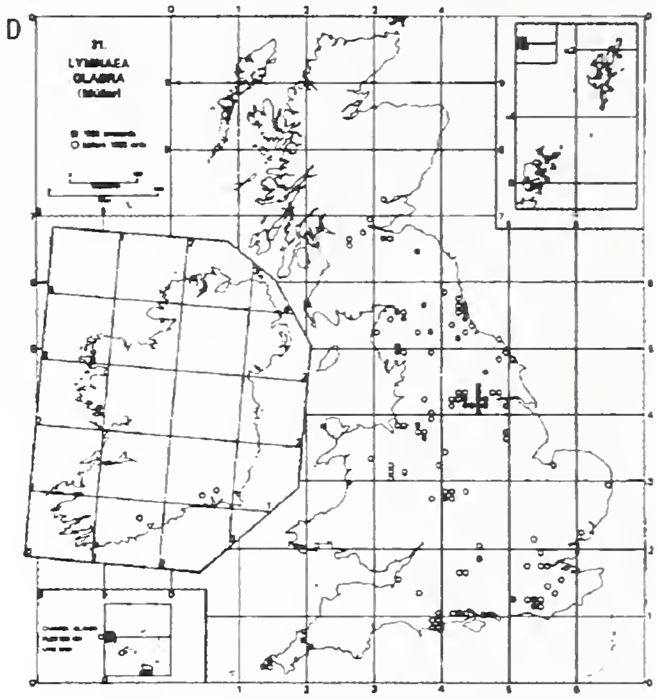
Molluscan highlights in Lincolnshire are a rare occurrence, most notable in the last 25 years being the discovery of *Sphaerium solidum* in the Timberland Delph in 1973. This was a new British species, is only found in that Delph and in the River Witham from Kirkstead to Langrick, and is found nowhere else in Britain. For inclusion in *Nature in Lincolnshire* (Smith 1996), the species has been called the Witham Orb Mussel.

The next highlight came in 1990 when *Pisidium pseudosphaerium*, a new county species, was found in the Metheringham Delph at Tanvats. This is a Red Data Book 3 (Rare) species (Bratton, 1991) with a very limited distribution mainly on the Pevensey Levels in East Sussex. Our latest molluscan highlight was the discovery, in 1996, of a snail presumed extinct in the county for over 80 years .


The Red Data Book mud snail *Lymnaea glabra* photo Roger Key

At the Union's field meeting' at Skellingthorpe Wood (SK9072) on 20th April, John Bratton, Annette Binding and Vi Wilkin found specimens of the mud snail *Lymnaea glabra* which is Red Data Book 2 (Vulnerable), in a pond which had been cleaned out within the last twelve months. The pond, which was situated in mixed oak, ash, and silver birch woodland, had a sandy-clay bed. Vegetation in the pond was sparse and consisted of reed sweet-grass *Glyceria maxima*, reedmace *Typha latifolia*, jointed rush *Juncus articulatus* and water plantain *Alisma plantago-aquatica* with

Potamogeton sp. We understand that before the pond was cleaned out it was completely choked with vegetation, and no doubt this will happen again as the above species spread. Associated molluscs were *Lymnaea peregra, Planorbis carinatus* and *Anisus leucostoma* but, surprisingly, *Lymnaea glabra* was the most abundant species.



The national distribution of *Lymnaea glabra*.
(Map reproduced, with permission, from Kerney (1976).

In 1905 it was recorded in a pool south of Lincoln, close to the railway (not a very good description!) in 1886. The site was destroyed in 1890. (Carter, 1905) Dr. Wallace found the snail in a pond near Scunthorpe in 1910, where it was abundant (Roebuck, 1910). The pond was shallow, full of. emergents, and situated on the sandy commons. (probably on Risby or Crosby Warren as the majority of other records seem to be traceable to that area). There was a subsequent record from the same site in 1913 (Roebuck & Musham 1914)) when the pond was dry, but the snail was found in moist vegetation. More recently it was found as a sub-fossil in Holocene deposits at Broughton in 1935 (Musham, 1935) and at Scawby in 1939 (Musham, 1940). At the latter site J.F. Musham stated that it still occurred live "not far away" but did not give a location, and may have been referring to the 1913 site, from which the last live records were known. From recent and earlier records we can form a picture of the preferred habitat of this species; a further search should be made for it in similar habitats in the Lincoln and Scunthorpe areas - it may not be as rare as we suppose.

The only new 10km square records for the post 1970 period were *Vitrea contracta* at Haugham Wood (TF38) (A. Faulkner), *Cernuella virgata* at Greetwell Meadow (TF07) (B.Eke) and *Pupilla muscorum* at Elsham chalk quarry (TA01) (J.Redshaw).

During 1996 there was a mutual exchange of information with the Environment Agency, and assistance was provided with species identification. I am grateful to Dr. Chris Extence and Richard Chadd for making records and specimens available for discussion. Also to A. Faulkner, V. Wilkin, B.Eke and J. Harvey for providing specimens or sending records.

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MAMMALS, REPTILES AND AMPHIBIANS - Norah Goom

There have been plenty of hedgehogs around and Maurice Johnson has been living on chicken in order to keep a family of them happy in his garden in Reepham while watching their behaviour. Moles have also been active throughout the county, though their evidence is not always so welcome to gardeners. Shrews, more often heard squeaking in the vegetation than seen, have not provided many records, but Paul King had a water shrew found drowned in a seal pool at the Mablethorpe Animal Gardens. Shrews can be difficult to distinguish within the species: very small common shrews and pygmy shrews require investigation of the teeth. For this reason it is helpful if members preserve any bodies found, and also owl pellets, which yield good records of shrew and other small mammals.

Hares have been attracting attention nationally, with debate on the size of current populations. In Lincolnshire in the 1970's hares were to be found in all but 4 10km. squares and it is possible that those were not covered by the survey. The concentration of records in the east of the county in 1996 is surely biassed by the number of observers and their random observations, and more records are needed to establish a base-line. There have been some reports of myxomatosis in rabbits but we have not so far had any reports of viral haemorrhagic disease. There are several reports of unusually large colonies in places such as golf courses, where they would not be too welcome.

Grey squirrels have been more in evidence than usual - but there was a splendid crop of walnuts in 1996! Nothing highlights more the need for widespread and consistent recording than the situation with voles. We had only 2 records of bank vole, 10 of field vole and 6 of water vole, yet this last species is now recognised as nationally endangered. There were also few records of mice. Bill Hoff's 40+ house mice not surprisingly seemed to prefer to dine in his corn-drier rather than in his house, apart from one which, during the winter months, was seen regularly abseiling down the curtain in the sitting-room. No dormouse record has been received though they are not far away from the county border, but they do not like crossing gaps in hedgerows. Harvest mouse has again been attracting the attention of the Mammal Society but we have very few records. One site previously known to Maurice Johnson now has no suitable habitat and others have so far been unproductive.

Foxes are plentiful, and we are told that some get released into the county by well-meaning people from elsewhere, who do not want them killed but just have too many for comfort. Whether we can support all of them remains to be seen. Usually urban foxes, they are vulnerable in open country and may not survive. The badger is a sensitive species and we do not computerise the records. There were more reports in the year, all too many of them found dead on the roads. Stoat and weasel records have been received in normal numbers, many of them for road casualties. Mink have been seen in 3 squares in the south of the county. Despite the numbers of the public making an annual pilgrimage to see seals in the Wash only 2 individuals have as yet found their way into our records.

Fallow deer continue to be the more commonly recorded than other species, but it would be interesting to know if the muntjac is actually spreading or merely more frequently noted. There is a record of a muntjac "stuck in a side-gate" in the middle of Holbeach.

Reports of reptiles and amphibians have again been sparse, with two exceptions. Frogs were recorded in 14 squares, which was encouraging in view of their general scarcity but populations may have been boosted in some places by the introduction of surplus spawn from garden ponds. A report from Keith Robertson relating to common toads at Anderby Creek is distressing, and I quote: "small ponds with c.40 visible, probably many more, a few pairs in amplexus, also c.70 freshly dead, variously mutilated (a few still alive) in about 6 small heaps amongst reeds at water's edge, predator unknown, probably not human."

Acknowledgements
Very sincere thanks to the following for their records: A&A&J.Binding, K.Bradshaw, E.JCunnington, A.Faulkner. S.Green, K.Heath, W.G.Hoff, M.Johnson, R. Johnson, P.King, V.Knight, J.Lamin, F.Lammiman, A.S.Lazenby, G.McGovern, J.Mighell, J.Ostler, P.Porter, J.Rance, K.D.Robertson, K.Rowland, T.Smith, I.Weston.

BATS - Annette Faulkner

During 1996 I have become records officer and a concerted effort has been made by four Lincolnshire Bat Group members to put all their old paper-based records, many dating back to the mid 1980s, onto the Trust's database. Records are still coming in, including old ones from the 1980's and earlier. I have also extracted the information from the Mammals of Lincolnshire (Johnson, 1982) and there are about 600 records waiting to be put onto the computer and many more still to be located.

So far most records up to 1995 are of roosts, mainly in buildings, mainly because they have been generated through English Nature's roof surveys. There are no old records of feeding areas and few of woodland bats, so that records are heavily skewed towards pipistrelles and brown long-eared bats, our two commonest species and the two most frequently associated with buildings. It is. pleasing to learn of a large house roost of whiskered bats in south-west Lincs, and two Daubenton's roosts at Tattershall have been monitored for a number of years. One of the most exciting finds for 1996 was a roost or Natterer's bats in a house in the north of the Fens.

Other records in recent years have come from sick, or injured bats. The majority are pipistrelles, but in the Lincoln and s.w. central area of the county a number of whiskered bats have been found, and one, possibly a Brandt's bat, in 1995. Also in Lincoln, in early 1995, two barbastelles were found, only the second record for the county. Sadly, one was already dead and the other died later in care. Little is known about these nationally rare and elusive bats and efforts are being made to locate the possible roost/hibernation site.

Two hibernacula are known in the north Lincs which have been monitored regularly since 1990. Daubenton's, Natterer's, whiskered, Brandt's and brown long-eared bats use both these sites every year.

Increasingly we are recording sightings and feeding areas, making the assumption that if there are bats there have to be roosts, even if we don't yet know where. The project 'Putting bats on the map' (Faulkner, 1997) started as a way of involving the public at a Bat Group display we had in Spalding in 1995. It proved immediately successful, with people queuing up to record 'their' bats, and led to the discovery of feeding areas and bats all over the Fens, as well as several new roosts. In 1996, we used this approach at Bat Group events elsewhere and we hope that this will fill some of the gaps on the map.

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L.N.U. MEETINGS IN 1996 - Phil Porter & Irene Weston

Old Wood Skellingthorpe SK9072 20th April.
An excellent attendance. The wood is quite well-known but now it is managed by the Woodland Trust, our records will provide a baseline for monitoring developments. The weather was clear enough for a good cross-section of birds including woodcock. The wood is partly coniferised and dense stands of hemlock and other conifers are being thinned. It retains some old hazel and ash coppice, damp areas, a pond and rides. There were large numbers of greater butterfly, twayblade, and early purple orchids, and goldilocks, wood speedwell, wood anemone, moschatel, woodruff, bugle, arum, primrose and wood sage. Both forms of yellow archangel were seen, the woodland subspecies *montanum* and the ornamental subspecies *argentatum* with the silvery blotches, which is probably an escape. John Bratton found a rare water-snail, unrecorded since early this century, and also showed how water beetles could be obtained from even small puddles and wheel-ruts. The paths in Old Wood are not clear in parts, and it did not go un-noticed when two members got lost for quite some time!

Haugham and Burwell Woods TF3682. 19th May,
The weather was fine and attendance excellent. We visited this chalk woodland for a successful fungal foray last October. It is owned and managed by timber growers who are wildlife enthusiasts, anxious for the records made. Annette Faulkner recorded 79 plants from the wood, as well as roadside plants from the verge. Notable plants included abundant moschatel, herb-paris, early purple orchid, bluebell, wood anemone, yellow archangel, ramsons, dogs mercury and greater bell-flower. The wood is cut by a small valley with wetland plants along a stream, although this had been dammed in places to produce pools which had not colonized yet to any great extent. In the wood is a chalk pit which fascinated the presidential team for a time, mostly through their efforts to get in and out again! Subsequent miscalculation of a few yards on the path caused them to once again get lost, this time narrowly avoiding the ignominy of being locked into the wood after the meeting had dispersed!

Moulton Marsh TF3131 15th June
This meeting was to have visited the saltmarsh at Surfleet Seas End but, a few weeks before, the habitat was destroyed by work along the river. The wardens of the Moulton Marsh reserve came to the rescue and the meeting took place in warm and dry conditions A series of habitats is being forged out of a former tip by extensive tree and shrub planting, with saltmarsh restoration along the river, compensation for the loss of such marsh in this area. There is now a great variety of habitats; reclaimed rubbish tip, sea-banks, saltmarsh and new lagoons. Kay Heath listed of 39 trees and shrubs planted in the past 15 years on the rubbish tip. It included guelder rose, laburnum, Scots pine, spindle, hazel and hawthorn. 127 species of plant were recorded at the meeting. The main interest botanically was the lagoons, which had colonized by large populations of brackish water plants. The rare tasselweed *Ruppia cirrhosa* was plentiful, remarkably so in view of its decreasing status in the county. Strawberry clover *Trifolium fragiferum*, another scarce plant, grew on the bank and brookweed nearby. Saltmarsh plants included sea aster, sea club-rush, and saltmarsh rush. Kay Heath also noted that the one plant of shrubby sea-blight is a substantial bush on the old high saltmarsh and so is likely to be indigenous to the site rather than planted. There were masses of silver Y moths and painted lady butterflies on the flowery drain banks.

Whisby Nature Park SK9166 20th July
By July, the weather had become really hot for the Presidential meeting. Despite this, a major find was a new reserve locality for water purslane. A good many of the section officers were on holiday and so the entomology, which might have been expected to save

the day in the very dry conditions, went unrecorded. Sadly, the overwhelming impression was that the gruelling heat rather blunted the recording instincts of the members present who were, to say the least, well strung out at the finish!

Beckingham Ranges SK8755 18th August
Continuing hot weather had dried out many of the attractions of this site, a pity because this was a new site for the LNU. Riverside pastures of the Witham were dry and tightly grazed although one or two of them still had species such as devil's-bit scabious, indicating damper conditions. The grassland were identified as botanically rich by a earlier survey. Other areas adjacent to scrub had a drier grassland flora with agrimony and lesser knapweed. The river has lost its bankside trees and a former oxbow lake was merely a rushy depression. Despite the best efforts to avoid a firing session at the ranges, many of the scrub and pond areas were only accessible to us for a short time, after the firing had finished. Nevertheless, the Witham had banded demoiselles, and an emperor dragonfly was seen on one of the ponds. Another exhausting day.

Far Ings Reserve, Barton-on-Humber TA0123 14th September
If the temperature had moderated for this meeting, the effects of drought were still clear and the wader scrapes were totally dry, although a greenshank was heard over-head. The large reedbeds in the claypits gave views of bearded tits and common birds of this habitat. A speckled wood butterfly was a very rare record for the locality. Calcareous grassland areas near the Humber bank still had lots of the semi-parasitic eyebright and the few plants of small scabious were are notable regionally. Among a range of saltmarsh plants identified on the shore were sea arrow grass, sea plantain, sea aster and scurvy grass, but the saltmarsh is narrow here. Nevertheless the strong attraction of sea aster for hoverflies on this still day, recalled that of bramble in full bloom, as demonstrated along the pathways on the landward side of the reserve, where plantings of native shrubs and trees have created a sheltered haven for invertebrates and birds.

Math and Elsea Wood TF0918 20th October
To add insult to injury, this year's fungus foray was spoilt by rain, a single day of it, amid much drier weather! The dry summer had in any case ensured that fungi were scarce and, although list was amassed, many were rusts and smuts to be found on foliage. The roadside verge and the woods were very rewarding for plants and 91 species were recorded. Wild service-tree was a mass of autumn colour and over 30 tree species were counted. One of the rides was filled with thin-spiked wood-sedge, not normally seen in such quantity. The hybrid hawthorn was present and also very good plants of the woodland form of tufted hair-grass *Deschampsia caespitosa* ssp. *parviflora*.

INDOOR MEETINGS

20th Jan Sat	Dragonfly Photography	Stuart Ball
17th Feb Sat	a.m. Recorder's Meeting	LNU Recorders
	p.m. Practical Workshop	Micro-moths, Mosses Owl pellets, 'Recorder'
23rd Mar Sat	Beetles in Lincolnshire, a Conservation Perspective. AGM & Presidential Address	Roger Key
10th Oct Thurs	Geology and Scenery of the Wolds (Joint with the East Midlands Group of the Geological Society)	David Robinson
7th Dec Sat	Christmas Miscellany	
	Fungus flora	Ken Rowlands
	Natterjack Toads	Kevin Wilson
	Festive Quiz	Jim Rance
	Party games	Dave Bromwich & Phil Porter

OFFICERS OF THE UNION IN 1996

President	Mr David R Bromwich	**President Elect**	Mr Phil Porter
General Secretary	Ms Sara Bright	**Treasurer**	Mrs Annette Binding
Auditor	Mr John Levine	**Membership Secretary**	Mr Allan Binding
Publicity Secretary	Mr Roger Goy	**Programme Secretary**	Mr Phil Porter
Sales secretary	Mrs Annette Binding	**Records Secretary**	Mr Rex Johnson
Publications Editor	Dr Roger Key	**External Representitives**	Mrs Jane Ostler Mr Ken Rowland
Executive Committee	Mr Graeme Clayton, Mr Mark Crick, Mrs Annette Faulkner, Mr Graham Weaver		

Section Recorders

Geology	Mr David Robinson	**Higher plants**	Mrs Irene Weston & Mr Marson Peet
Bryophytes/Lichens	Prof. Mark Seaward		
Fungi	Mr Ken Rowland	**Birds**	Mr Jim Rance
Mammals	Miss Norah Goom	**Bats**	Mrs Annette Faulkner
Molluscs	Mrs Vi Wilkin (N), Mr John Redshaw (S)	**Spiders**	Mr Roy Kent
		Isopods	Mr Rex Johnson
Dragonflies	Mr John Redshaw	**Moths**	Moths Mr Rex Johnson
Butterflies	Mr Allan Binding	**Beetles**	Dr Roger Key
Flies	Mr Andrew Godfrey & Miss Jillian Binding		

✝ OBITUARY - DR GRACE M. WATERHOUSE **by Ken Rowland**

In the space of twelve months we have lost our two leading mycologists. Last year we had to report the death of Jack Houghton and this year we have sadly to follow with the death of Dr Grace Waterhouse on the 9th of May, shortly before her ninetieth birthday. Needless to say that in the small space available here, it is not possible to note all of her interests and activities but only to note those where her involvement was with the Lincolnshire Naturalists' Union.

Born and educated in London, she graduated from the University of London were she was awarded an MSc for her study of the fungus genus *Phytophthora*. She then embarked on a teaching career which led her to a position at the Lincoln Training College in 1942. With her interest in botany she soon sought out the LNU and joined in 1943, becoming the Mycological Secretary that year. Returning to London in 1945 where, after another spell at college, she joined in 1946 what is now the International Mycological Institute, where she stayed until her retirement. In 1983 she was awarded a DSc for her mycological work, an award of which she was justly proud.

During this period she wrote keys to some of the lesser known fungi, notably, *Phytophthora, Sclerospora, Pseudoperenospora* and *Entomophthora*. During the whole of this time she maintained a great interest in the LNU, becoming a life member in 1952 and was elected president in 1955 when her presidential address was entitled "Larger Fungi on Lawns". Holding the position of Mycological Secretary until 1965 when she was elected President of Botany a position held until her death.

Until she was in her eighties she never missed the annual fungus foray, at which her advice was always freely available to everyone, and it was with much regret that she gave up the long journeys required to attend. Whilst some members will only remember Grace Waterhouse from the list of officers in Transactions, those that did know her will remember her with respect for her very wide knowledge which she was always ready to share.

I am grateful to the editor of Mycological Research for permission to extract information from the Obituary published there.

† OBITUARY - ELIZABETH JOAN GARLICK M.A. by Irene Weston

Joan Garlick, who died in June 1996, age 76, joined the Lincolnshire Naturalists' Union in 1976 and later became its ornithological secretary and treasurer. She was born at Little Barrington in Oxfordshire and became a geographer. She graduated from Liverpool University then taught at Bangor, Bath and in New Zealand, returning to lecture and then became Vice-Principal of Bishop Grosseteste College in Lincoln.

Her prime natural history interest was in ornithology but, on retirement in 1980, her interest broadened and she joined my adult education class in botany and became absorbed in flowers. The late Joan Gibbons and I introduced her to the Wild Flower Society and the Botanical Society of the British Isles and, as her interest intensified, she became a keen member of both. As with all her other interests she soon became adept at this new discipline and was soon recording the flora as well as birds for local and national surveys. With the late Vyvyan Pennell she recorded plants for the Lincolnshire squares in the BSBI monitoring Scheme in 1987.

As well as Lincolnshire Naturalists' Union field meetings and summer botany class trips to Anglesey, Aberystwyth, Gower, Derbyshire, Cumbria she extended these to expeditions to mainland Europe and then to Canada, the Himalayas and many trips to New Zealand where she had geographical friends. She also assisted with courses for the Field Studies Council to the Burren and the Pyrenees, combining both botanical and geographical disciplines with masterly scholarship and great practical ability and she was always in great demand with students, sharing her skills in map reading and interpretation of the venue's topography. Members remember her illustrated talks resulting from her trips with pleasure.

Latterly small groups of botanical friends congregated in the Cotswolds where she lived after leaving Nettleham. There were seven of us for her 70th birthday and on subsequent forays she introduced us to the flora around her home. Her local organisations there in Fulbrook also recognise her great contributions to local historical research and the parish particularly for her organisation of church affairs.

I have written mainly of Joan's botanical pursuits, knowing these well, but the ornithologists also miss a valued colleague and many tributes to Joan have been paid by LNU members since her death. Joan was determinedly active up to shortly before her death. She died at the Burford hospital with her sister and friends near her. The Gloucestershire and Oxford Naturalists greatly miss their local member and the Lincolnshire Naturalists' Union a wonderful old friend.

Contributing to "The Lincolnshire Naturalist"

We are constantly on the lookout for full length articles or short notes, even a few lines, on any aspect of Lincolnshire's natural history, current or historic. Consider a note in The Lincolnshire Naturalist for any new or significant observations.

Articles should be typed. It would help the editor *tremendously* if they could be sent on a 3½" computer disk with accompanying paper copy, in just about any word processor format (although don't let this put you off sending in an article) and in the format described here. Adding an ASCII text file in addition to the word processed file will ensure that it can be incorporated directly. Most word processors can also output in ASCII.

Drawings, black & white photographs, colour transparencies or negatives (please include a print) can be included. Colour illustration may be rendered to black & white. Please give a caption. Illustrations will be returned and edited text resubmitted to the author for approval and proof-reading before publication.

Convention adopted for names - Latin names should be *italicised*, **not** (bracketed) or underlined and should follow the English name (where applicable) with no separating comma. English names should start with lower case letters unless incorporating other names warranting capitalization (eg Brandt's bat). References to journals and books should please as below. Pease note and use the capitalization and italic convention.

WOODRUFFE-PEACOCK, Rev E.A., 1900. The Lincolnshire Naturalist's at Freiston. *The Naturalist*, **25**: 141-144.
DUDDINGTON, J. & JOHNSON, R. 1983. *The Butterflies and Larger Moths of Lincolnshire and South Humberside.* Lincolnshire Naturalists' Union. Lincoln. 299pp.

The final copy date of **31st March** of the year in which the Transactions are to be issued. Please contact the editors directly if there is difficulty in meeting this deadline.

If in any doubt as to whether your observation merits a note or an article, or you have any other queries please do get in touch with the editor Dr Roger Key, 67 Peterborough Road, Crowland, Lincs, PE6 0BB, tel 01723 210541, to whom texts should be sent.

Editorial

Roger Key

This is the second issue of the *Transactions of the Lincolnshire Naturalists' Union* under the title 'The Lincolnshire Naturalist'. The new format seems to have been very well received, both by authors as well as readers, such that I have literally been inundated with copy - an almost unprecedented position for an editor to be in! At first draft, the content exceeded by 16 pages what was practicable to include in a single issue. I have had to exert my prerogative as editor to trim, cut, précis and shorten. If some of the articles seem somewhat clipped in style, then the fault is probably mine, not the original author's.

Another option would have been to have held copy over until next year. I gambled that the success of the magazine will continue. It is now up to you the readers and contributors to prove me right. In addition to full length 'papers' I would in particular welcome short articles and observations that may take just a few lines but will communicate an observation of interest to the reader. These are not just space fillers - they serve to enliven the style and diversify the content. More photographs, drawings, figure and maps of subjects of Lincolnshire natural history interest would also be welcome, whether they illustrate long articles or brief notes. Enjoy your natural history studies, keep up the good work and keep the copy coming in!

THE LINCOLNSHIRE NATURALIST

including
Transactions of the Lincolnshire Naturalists' Union
for 1996
Volume 24, Part 2, 1997

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cover photograph
brown hawker dragonfly *Aeshna grandis*
photo courtesy of Eric Wright F.R.P.S.